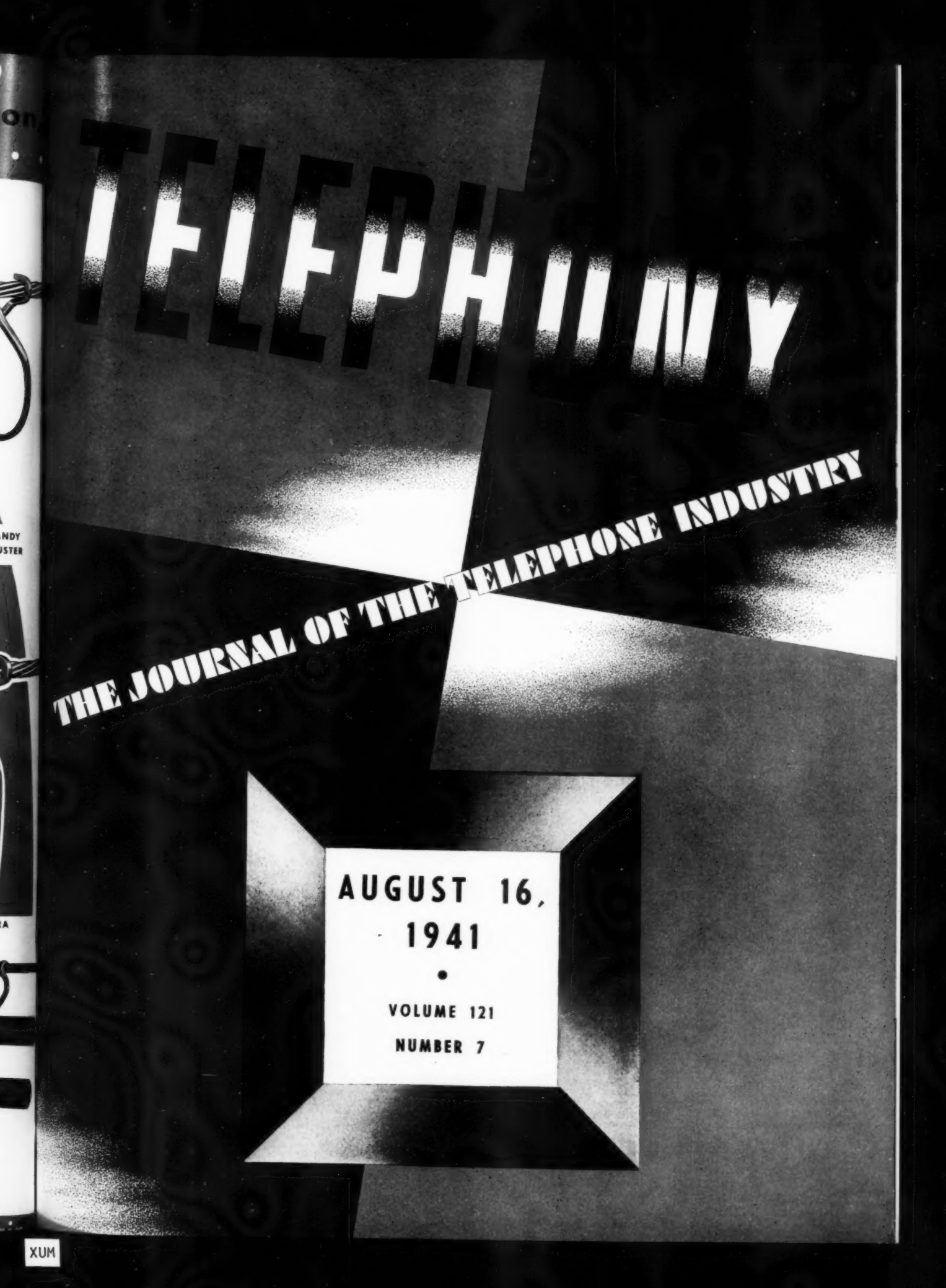
TELEPHONY
THE JOURNAL OF THE TELEPHONE INDUSTRY
AUGUST 16, 1941
VOLUME 121
NUMBER 7

LOOK FOR THESE TAGS. *They are placed for your protection on every coil of Amertel Telephone and Telegraph Wire and Amerstrand Steel Strand.*

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Cleveland, Chicago and New York

Columbia Steel Company, San Francisco, *Pacific Coast Distributors*
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Telephony

608 S. Dearborn St. Chicago

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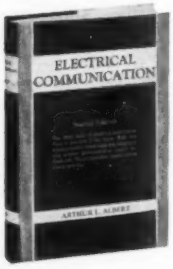

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Professor of Communication Engineering. Oregon State College

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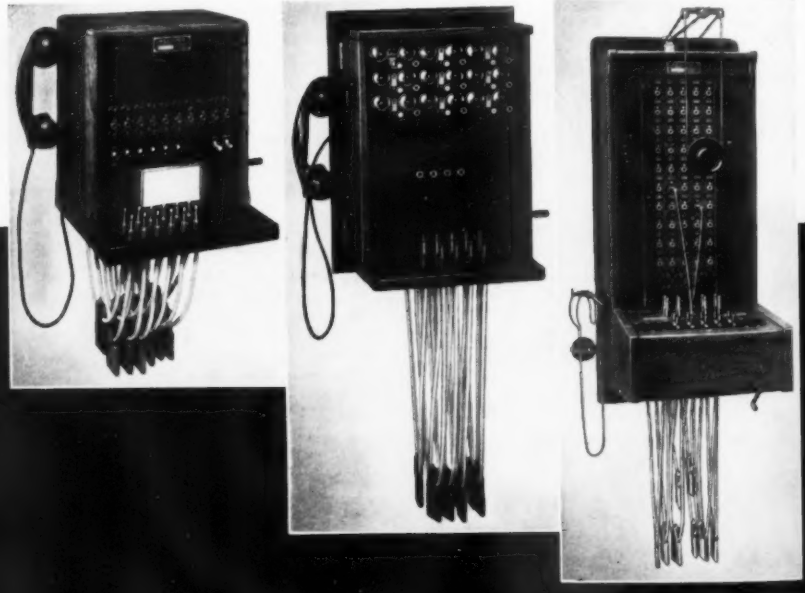
Complete details of Kellogg Wall Magneto Switchboards contained in Bulletin 124. Write for free copy.



SEE WHY OTHER MAGNETO EXCHANGE OWNERS

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One of the important decisions in the life of a telephone exchange owner comes when he purchases new central office equipment. Besides giving satisfactory service to his subscribers, it must pay its own way. For the telephone business is a service business, and to be profitable the equipment must be simple to operate and easy to maintain over a long period of years.

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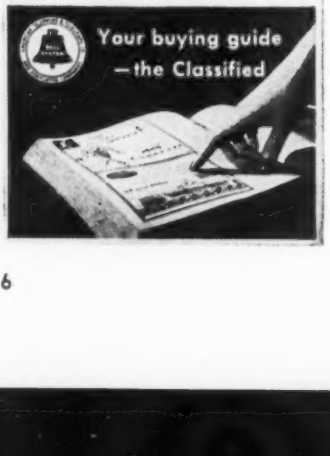
A typical case: Mrs. O. had a baby carriage needing repairs. She looked in the Classified under Baby Carriages, was attracted by the ad of a nearby firm—which did the job.



Helping "buyer" and "seller" get together

ADVERTISEMENTS like the one at the left appearing in general magazines stress the value of the Classified section of telephone directories *to consumers* for shopping and buying, and to promote reference.

Advertisements like the one at the right appearing in trade magazines point out the value of the Classified section of telephone directories *to dealers* as a most effective selling media.

Together they form a continuous promotional campaign to make telephone service as well as the Classified more serviceable and profitable to its users all over the country.

AN ADVERTISEMENT OF THE BELL TELEPHONE SYSTEM

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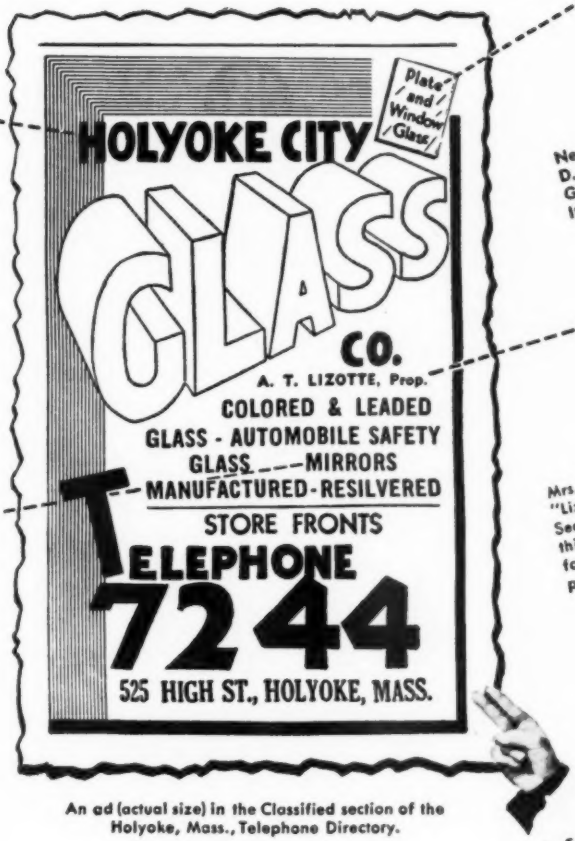
Needing a window replaced, Mrs. D. Y. noticed the words "Window Glass" and gave this firm the job. It pays to give detailed facts.

Mrs. C. L. wanted to have a mirror resilvered. Seeing this ad reminded her that she knew the firm's reliable reputation and had noticed their location. The specific words "Mirrors resilvered" clinched her favorable impression and she called them.



An ad (actual size) in the Classified section of the Holyoke, Mass., Telephone Directory.

Mrs. W. H. S. remembered the name "Lizotte" but not the firm name. Seeing them together here she knew this was the one she wanted. A tip for you, if your own name is not part of your firm's name.

Mr. E. R. had a mirror he was proud of and wanted it cut. This firm, by the wide scope of information in the ad, impressed him as being well qualified. Does your "copy" in the Classified do justice to the breadth of your service?

5 reasons this AD makes sales!

THE actual advertisement above has appeared for years in the Classified section of the Holyoke, Mass. telephone directory. It illustrates why advertising in your telephone directory gets results.

Frequently, people who look in the Classified have no idea of where they want to buy. Their decision is determined by the information they read there—for example by answers to such questions as: What brand name products do you sell? Will you give estimates? Do you sell used materials? What is the scope of your delivery service?

The Directory representative can give you helpful suggestions as to what information about your business should be included in the advertising. He has copy and layout experience at your service. Just call the local telephone business office.

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See That They Are Securely Hung on Wood, Metal or Concrete Poles with— NATIONAL SIGN BRACKETS

No holes to drill — no fuss — no bother, just fit the bracket around post or pole and fasten with bolt and nut.

With these brackets, flanged or flat signs can be quickly, securely, permanently and neatly hung on wood, concrete or metal pole or post.

TYPE 170
For 5" or smaller posts.

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These brackets are strongly made and will hold their position. They assure maximum visibility for your signs. Made in two types (as illustrated) of finest material and Hot-Dip Galvanized for rust prevention.

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Export Distributor—International Standard Electric Corp., New York, N. Y.

Subscriber Satisfaction Means Profits

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New Improved RTC-2 VINCENT
RARE GAS RELAY

- *Installed in a Minute*
- *No Moving Parts*
- *Thousands in Service*
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Eliminates unbalance noises in metallic party lines employing divided ringing to ground. Works with either harmonic or code ringing.

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Non-Grounding Rare Gas Arresters
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55-63 Dickerson St. Newark, N. J.
Signal Circuit Engineers Since 1906

TELEPHONY

The Journal of the Telephone Industry

August 16, 1941 — Vol. 121, No. 7

IN THIS ISSUE

DEMOCRACY'S CONSTANT STRUGGLE FOR LIBERTY—*By Arthur W. Page* 9

IN THE NATION'S CAPITAL—*By Francis X. Welch* .. 11

FIELD OFFICES OF PRIORITIES DIVISION OF OPM 12

ELEMENTS OF THE TELEPHONE (Part VII) 13
By Harry Chapman

THE PLANT MAN'S NOTEBOOK—*By Ray Blain* 15

THE OPERATOR'S CORNER—*By Mayme Workman* .. 20

COMMISSIONS AND COURTS 26

WISE SALES TIPS—*By W. L. Hudson* 27

PERSONALS 28

BOOK REVIEW 29

WITH THE MANUFACTURERS 30

"*TELEPHONY'S*" ENGINEERING DATA 32
By J. Ernest Hartz

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608 S. Dearborn Street, Chicago, Ill., U. S. A. Tel. Wabash 8604

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DEMOCRACY'S CONSTANT STRUGGLE

For Liberty

By ARTHUR W. PAGE
Vice President, American Telephone & Telegraph Co.

AS I UNDERSTAND it, up until about 200 years ago engineering wasn't a self-conscious profession except for the purpose of killing people. The only kind of engineer that Johnson recognized in his dictionary (1755) was the military variety and the line he quoted to explain the meaning of the word was Hamlet's comment — "For 'tis the sport to have the engineer hoist with his own petard."

In a sense and to a degree I think that is what has happened. But the sport was not as good as Hamlet pictured, for the petard was a very big bag of powder and hoisted a lot of other people besides the engineer.

I have a feeling that the engineers have been so successful in making what we loosely call democracy work, that they have undermined a good many people's faith in it. This sounds a little Irish but if you will bear with me a few minutes I will try to lay the case against you before you, so to speak.

In the first place, democracy is a form of government. I do not think really that we are violently interested in forms of government as such. Any form, or next to none as Jefferson preferred, would do us if at the same time we could have personal liberty and reasonable opportunity. It was because other forms of government interfered with people's pursuit of happiness more than representative government, that we chose the representative form which we call democracy.

ARTHUR W. PAGE

The writers on government trace the origins to Runnymede and various other ancient incidents, but the pursuit of happiness for the common man really began to have prospects of success after mankind took up engineering and began to improve the manufacture of clothing, housing, and to make cheap for the multitude the necessities and comforts of life.

This kind of engineering was the product of the liberty and freedom that took a strong hold on men's minds some 200 years ago. Perhaps the publication of Lock's "Of Civil Government" in 1690 is as good a single date as any to mark this. A period followed in the world when more men had a chance to do something for themselves, to think for themselves, to work for themselves, to be freer to follow their own judgments and freer to take on responsibility for their own welfare.

For most of the history of the world prior to that, a very small proportion of the people had been telling the rest what to do and how to do it and what to think about it. The few who were doing the telling were the governing classes. They were undoubtedly brighter than the other people, for that is how they got the job of doing the telling, but in spite of that, when their brains were spread out over all the people, the coverage was pretty thin. The result was that although mankind had lived for thousands of years on a bountiful earth, practically all of them had a serious case of what is now called "underprivileged," except the few who were doing the thinking and telling the others.

However, as the license to think for one's self and act for one's self got to be wider spread, extraordinary things began to happen. All sorts of inconsequential people began to turn up with ideas that worked. Arising out of this freedom to try for one's self did come a time when great numbers of people were fed, clothed and kept warm far better than had ever been done in the world before.

Along with this came another

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revolutionary idea, which was not only to allow every one wider latitude to think for himself, but actually to try to stimulate thinking. The way they went at it was to send boys to school. I don't know that we can be sure it is an effective way, but the process has gone on ever since. And it was logical enough, for the little group that had done the thinking and planning had had schools.

The old universities were trade schools or professional schools for the ruling classes to learn how to rule. If you could teach people how to rule in a school, even if the result was not too good, you might also stimulate their minds in other directions.

So freedom and education marched hand in hand holding up the banner of opportunity. The army that came behind, however underprivileged it would look to present-day standards, was the cheeriest, most confident, best fed, good-natured and disorderly army that had ever appeared on the globe.

The men had hope for their generation and the women for the next. Every one tended to go his own gait in his own way. What is more, there was a little margin which tended to make people speculative and careless. If one thing didn't work, they tried another. They got in each other's way. There was little quiet and little order.

These people made far more progress than had ever been made before, but in a most higgledy-piggledy manner. The disorder of the progress produced jams of one kind or another, disturbances and fights. It was obvious that there had to be some rules to prevent too much interference with each other, and at the same time not enough rules and regulations to produce the old result of having the minimum number of rule-makers do all the thinking and tell the others what to do.

The history of what we call democracy has been a constant struggle between liberty and regimentation to strike a happy balance. In a country like ours which for many purposes is but a single market and in which, therefore, commercial actions ramify over great areas it is natural that we get in each other's way, natural that there are clashes of interest. It is also natural that this leads to a demand for the regulation of the conflicts.

All during our history the people who have felt that they were getting the worst of these clashes have run to the government for relief—manufacturers, distributors, consumers, farmers, laborers—every one runs for special protection. And this is not a new phenomenon. It did not begin with the NRA. It has been with us a hundred years.

Before the revolution the price of tobacco was maintained as cotton is now. Years ago state money was used to build railroads at the instance of certain groups as state money is used to furnish electricity now. There is a constant tendency for one part after another of our means of making a living to get under the limitation of the thinking of a few people in authority. But at the same time there is a tendency to have the whole process constantly revitalized by new industries which come up with vigor, untrammeled by restraint—a succession like the steel, the automobile, and the chemical industries.

What is the difference between having a few men at the head of big industry do the thinking and deciding for the many and having the deciding by a few men in governmental positions? This centralization of power in government is often to prevent the centralization of power in industry. The difference I think is clear enough. In the industrial world a few men do not do the thinking—a very large number of people contribute to the decisions and the teams of people that do this have to live with the results of their actions. They are responsible — individually and in groups.

The concentration of authority in government agencies is not accompanied with the same responsibilities, and while the public can always appeal to the government about industry, it can't appeal to any one about government operations except a general election which is not likely to be effective for this purpose. Putting management in the hands of the representatives of everybody, while it sounds like the acme of liberty, in practice tends to reduce the chances of men to do their own thinking for their own profit, and by the same token tends to degenerate the vitality of the American experiment.

That brings us to the kind of quandry that is usual in human affairs. The more complex our civilization grows because of the success of individual initiative, the more clashes of interest arise and the more it seems necessary to curb individualism in order to preserve liberty. Yet the very curbing tends not to preserve liberty but to reduce it by placing as a ceiling on national

(Please turn to page 21)

COMING CONVENTIONS

Three-state joint meeting of Maine, New Hampshire and Vermont Telephone Associations, Mount Washington Hotel, Bretton Woods, N. H., September 9, 10 and 11.

Arkansas Telephone Association, Arlington Hotel, Hot Springs, September 22 and 23.

Association of American Railroads, Telephone Section, Hotel Gibson, Cincinnati, Ohio, September 23, 24 and 25.

South Dakota Telephone Association, Hotel Carpenter, Sioux Falls, October 8 and 9.

United States Independent Telephone Association, Hotel Stevens, Chicago, October 14, 15, 16 and 17.

Independent Pioneer Telephone Association, Hotel Stevens, Chicago, October 16.

Virginia Independent Telephone Association, Hotel Roanoke, Roanoke, October 23 and 24.

North Carolina Independent Telephone Association, Pine Needles Inn, Southern Pines, October 27 and 28.

South Carolina Independent Telephone Association, November 3 and 4.

Florida Telephone Association, New Florida Hotel, Lakeland, November 7 and 8.

Alabama Independent Telephone Association, November 13 and 14.

Tennessee Independent Telephone Association, Hermitage Hotel, Nashville, November 17 and 18.

Kentucky Independent Telephone Association, December 2 and 3.

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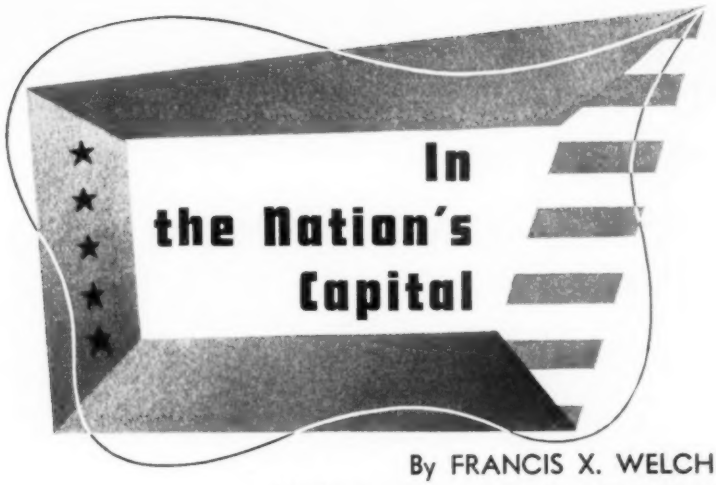

By FRANCIS X. WELCH
Washington Correspondent for TELEPHONY

OPM approves A-10 maintenance and repair priority rating for utilities other than telephone . . . Author wonders if communications rating being held up to allow further study for more preferred rating . . . Procedure reviewed for obtaining priorities, and OPM field offices listed.

SOMETHING mysterious happened to the "A-10" priority order covering utilities between the time it was recommended by OPACS and when it was promulgated by OPM. Whatever it was that happened, it does not look particularly good for the telephone industry. Of course, the trouble may be only temporary, or there may be no trouble at all. It may be that OPM is going to fix up a special priority dish for the telephone industry.

But on the surface of the order put out by OPM on August 8, it would appear that OPM considers virtually every other form of public utility service as being more immediately essential to the national defense than the telephone business.

Let us review briefly just what *did happen*. You will recall that some weeks ago OPACS recommended that all forms of utility service, *including telephone and telegraph,* together with certain other public service and quasi defense industries, were so essential that they should get a high priority rating for "maintenance and repair." Unofficially this recommendation asked OPM to give the entire group a rating of "A-10" for maintenance and repair and "A-1-a" for emergency breakdown.

Well, the order lay on OPM's desk for a matter of weeks. And now OPM has acted upon it. But in the process the telephone and telegraph industries have been *omitted* from a list of nine industries, to which the A-10 rating will become immediately available. But they are included in a list of nine other industries—a sort of deferred list—to which the rating will become available *"as soon as the Priorities Division can handle the needs of the industries listed"* (meaning, presumably, the first nine industries listed).

Industrial classifications in which the A-10 rating is being made immediately available are:

(1) Commercial air lines maintaining regular scheduled service.

(2) Explosives—plants engaged principally in manufacturing explosives.

(3) Metallurgical plants engaged in the production of metals and alloys.

(4) Mines—including ore dressing and processing plants and smelting facilities.

(5) Federal, state, county, and municipal services: Protective services (fire and police); utilities—electrical energy (production and distribution), gas production and distribution (manufactured and natural), water production and distribution, sewer service; common carrier passenger transportation by urban, suburban, and interurban electric railways; also by urban and suburban motor and electric coach.

(6) Public utilities (privately owned) —electrical energy (production and distribution), gas production and distribution (manufactured and natural), water production and distribution, and sewer service.

(7) Railroads.

(8) Coke converters.

(9) Common carrier passenger transportation by urban, suburban, and interurban electric railways; also by urban and suburban motor and electric coach (privately owned).

And here's what the OPM release said about the second group:

As soon as the Priorities Division can handle the needs of the industries listed, the order will be extended to the following list of industries, all of which are also considered to be essential to the national defense program:

(1) Ammonia—plants engaged principally in producing ammonia for refrigeration.

(2) Chemicals—plants engaged principally in manufacturing chemicals by chemical processing of raw products.

(3) Food processing and storing—plants engaged principally in producing, milling, refining, preserving, or wholesaling food.

(4) Hospitals, clinics, and sanatoria.

(5) Intercity motor coach common carrier passenger transportation.

(6) Quarries.

(7) Radio commercial communication —including commercial broadcasting but not including home receiving sets.

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(8) State, county, and municipal services:
Common carrier and school buses
Highways
Hospitals, clinics, and sanatoria
Public buildings, institutions, schools, and parks
Street railway, trolley bus, subway and elevated lines.

(9) *Telephone and telegraph communication.*

Other essential industries will be added as soon as practicable and required.

At its face value, the order would seem to indicate that OPM doesn't think there is quite so much rush about keeping up the telephone and telegraph services as there is about keeping up the other public utility services. Of course, it may be that, as a result of the strong representations recently made by spokesmen for the telephone industry for even *extending* the A-10 rating somewhat beyond strict maintenance and repair, OPM is planning to put out a special order that will cover the peculiar requirements of the communications industries. But your correspondent could obtain no confirmation of this; so it may be only wishful thinking.

As the order stands, we can at least expect that the A-10 rating will come along any day now for the telephone business—as soon as OPM gets around to it. But it is, at least, disturbing to witness the complacency with which OPM appears to view the priority problems of the telephone business. And it is to be hoped that the granting of priority for other forms of utility service ahead of the telephone business is merely an unfavorable coincidence which does not reflect the true estimation of OPM as to the importance of the nation's communications service.

Again, it may possibly mean that OPM feels the telephone industry is relatively a little bit better off with respect to strategic and scarce materials than the other utility groups. That is all speculation.

It is noteworthy that for those utilities which are already "in," the A-10 rating is *not* automatically available to any producer, manufacturer, or agency in the classifications listed. Inasmuch as the same regulations will probably apply to the telephone group when its priority rating finally comes along, it might be well to review the following details of priority procedure, so that you will know how to get a priority when you need one and when you can have one. The OPM states:

Field Offices of Priorities Division of OPM

William P. Homans, Dist. Mgr.,
Priorities Field Service,
Office of Production Management,
30 Pearl St.,
Boston, Mass.

Phillip M. McCullough, Dist. Mgr.,
Priorities Field Service,
Office of Production Management,
33 Liberty Street,
New York, N. Y.

James B. Crockett, Dist. Mgr.,
Priorities Field Service,
Office of Production Management,
Wood and Alkard Sts.,
Dallas, Texas.

Walter Hall, Dist. Mgr.,
Priorities Field Service,
Office of Production Management,
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Detroit, Mich.

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William T. Walker, Dist. Mgr.,
Priorities Field Service,
Office of Production Management,
E. Sixth St. & Superior Ave.,
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Priorities Field Service,
Office of Production Management,
Seventeenth & Arapahoe Sts.,
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Office of Production Management,
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Office of Production Management,
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Andrew L. Kerr, Dist. Mgr.,
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San Francisco, Calif.

Bruce W. Burroughs, Dist. Mgr.,
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Office of Production Management,
Union Trust Bldg.,
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Office of Production Management,
Stuart Bldg.,
Seattle, Wash.

G. Howard Hutchins, Dist. Mgr.,
Priorities Field Service,
Office of Production Management,
1151 South Broadway,
Los Angeles, Calif.

Clifford H. Carr, Asst. Dist. Mgr.,
Priorities Field Service,
Office of Production Management,
Federal Reserve Bank Bldg.,
Kansas City, Mo.

Before any person may use the rating, he must apply for its use on a special form—PD-67—which may be obtained by writing to the Priorities Division, Attention, Maintenance and Repairs Section, 462 Indiana Avenue, Washington, D. C., or by writing to any one of the Priorities Division Field Offices. Copies of application forms will be available in these offices next week (beginning August 11.).

If an application is granted, the approved firm or agency will receive an authenticated copy of the new order (P-22-a).

Each producer or agency granted the use of the rating must agree to its terms in writing, executing a copy of the order and filing it with the Priorities Division, before the rating can be applied.

Each order issued will bear a serial number. The rating can be applied by executing a copy of the order, inserting the serial number, and serving it on the supplier. Additional orders placed with suppliers must be identified by insertion of the number assigned.

The plan includes provisions so that a supplier, when served with a preference rated order, may in the same manner extend the rating to his own suppliers. Printed copies of the order for such purposes may be obtained at field offices or from the Priorities Division.

Although the rating to be used generally is A-10, a special emergency rating of A-1-a may be assigned within the nine industrial classifications named in cases of extreme urgency. This rating may be used, however, *only when telegraphic applications have been granted.* Such telegraphic applications for emergency ratings will be granted by the Maintenance and Repair Section only in especially urgent

(Please turn to page 23)

By **HARRY CHAPMAN**

ELEMENTS OF THE TELEPHONE

Part VII of a series on the operation of the telephone discusses the construction and functions of the dry cell battery. Part VI, published in the July 26 issue, dealt with operating principles of the receiver.

THERE ARE two common ways of generating electricity: by chemical action or by mechanical means. The dry cell represents a chemical means of electrical generation. Since everyone is familiar with dry cell construction, we shall confine this discussion to a description of the various parts and their action in generating electrical current.

The dry cell consists of four main parts: the zinc container, the paste or electrolyte, the carbon rod and the depolarizer. The zinc container serves also as the negative plate of the cell and supplies energy for the electric current. The zinc may be compared with the coal which supplies heat to a furnace; and, as it is used up, the cell becomes useless in the same way that a fire goes out when the coal is consumed.

The amount of electric current a dry cell will produce is determined, to a great extent, by the quality and thickness of the zinc. "Blisters" and holes may be found on the outside of an old dry cell when it is nearly exhausted. In a properly designed dry cell, the electrolyte or paste and the depolarizer will be fully consumed at practically the same time as the zinc.

"Dry cells" is a misnomer for they are not dry, but moist. A paste is used in lieu of acid as in a storage cell. This paste is referred to as electrolyte. The electrolyte bridges the two electrodes, the carbon or positive, and the zinc or negative, and forms a conductor or path for the electric current to travel within the cell when in use.

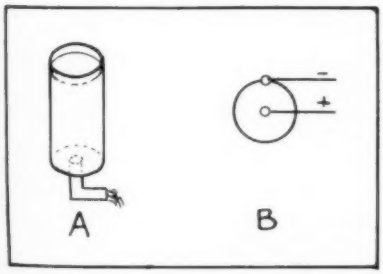

Fig. 1. The operation of a dry cell can be understood by comparing it with a watertank.

The paste is principally sal ammoniac in coarse powder form which unites with the zinc. This same sal ammoniac in hard form is often used to "tin" soldering irons. Zinc chloride, manganese dioxide, carbon in powder form and a small amount of graphite are also used in the electrolyte.

Zinc chloride reduces the action of the sal ammoniac, while the cell is discharging. Sal ammoniac eats up the zinc, but has little or no effect on the carbon rod. The zinc is consumed in the changing of chemical energy into electrical energy. No current would be produced if both plates were of the same material.

When a cell is being discharged, a hydrogen gas film forms on the carbon electrode. This film is a poor conductor and permits passage of only a small current through it. If this gas film were not removed as it is formed it would soon cause the cell to become inoperative or polarized. The design of a cell must provide some method to remove this gas. The oxygen in manganese dioxide, which has the appearance of black sugar, unites with the free hydrogen gas and forms water.

The heavier the drain on the cell, the more rapid is the formation of hydrogen gas. This action can reach a point where the depolarizer, manganese dioxide, cannot prevent the formation of gas on the carbon rod. For this reason, a dry cell will not give maximum service at excessively high discharge rates. If the cell is permitted to rest for a short period after being on a heavy drain, it will recuperate a part of its power. This is brought about by the depolarizer changing the gas to water while the cell is idle.

While the paste in a dry cell will conduct electricity, the manganese dioxide will not. To provide an electrical path through the manganese dioxide a special powder graphite is added. The top of the cell is sealed

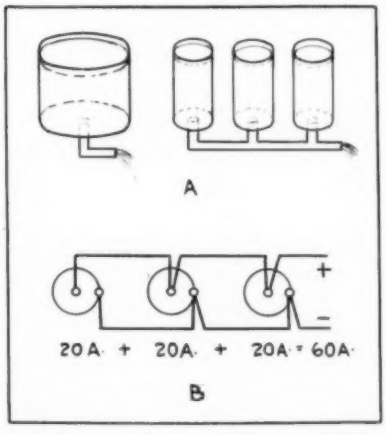

Fig. 2. Three dry cells, or watertanks, in parallel have three times the capacity of a single cell or tank.

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with a special sealing compound to prevent the paste from drying out. Once the moisture disappears from a cell, it will cease to function.

In the cheaper grades of dry cells, the zinc often contains small particles of iron, copper and other impurities which cause local action and shorten the life of the cell. The better grades of dry cells will, in all cases, prove the cheapest for telephone use.

Due to the moisture content of dry cells, they will always give better service in a warm temperature than in an extremely cold location. New dry cells all have a 1½-volt rating. However, the current will vary with the size of the cell. Naturally, a flashlight cell will have a lower current rating than will the standard No. 6 cell as used in the telephone work.

To understand better the operation and characteristics of dry cells, let us consider a watertank analogy. A tank of 20-gallon capacity, with the liquid at sufficient height to give a pressure of 1½ pounds at the outlet, is shown in *Fig. 1-A*. In this case, gravity is the prime mover, for the height of the tank, and not the volume, determines the pressure at the outlet.

We shall consider this tank with its 20-gallon capacity at 1½ pounds pressure comparable to a dry cell with a pressure of 1½ volts and a capacity of 20 amperes. With the outlet at the bottom of the tank adjusted to permit one gallon of water to escape per hour, we should expect a flow of water for twenty hours, much the same as a dry cell connected in a circuit which permits one ampere to flow from the cell per hour to operate the circuit for twenty hours. However, as the liquid flows from the tank, the height of the liquid is lowered, reducing the pressure in the same manner as when the voltage of a cell becomes weaker on discharge.

The use of dry cells on circuits with a discharge of one ampere is impracticable; storage batteries should be used to supply a current of this value. These figures are given only as a matter of illustration, and we all know that dry cells should only be used to provide small current flow.

To cause the liquid to flow for a longer period of time at the same pressure, i.e., 60 hours instead of 20, a tank of 60-gallon capacity instead of 20 will be required with the liquid at the same height. Or, three 20-gallon tanks can be used as shown in *Fig. 2-A*. Either of these arrangements will provide a flow for 60 hours at a pressure of 1½ pounds and at a discharge rate of one gallon per hour.

The same principle may be applied to batteries, as indicated in *Fig. 2-B*. The three dry cells are connected in parallel, which will increase the current capacity to 60 amperes, or 60 hours, at a one ampere discharge rate. The positives and negatives being all connected together, the pressure, like that in the tanks, remains the same, or 1½ volts.

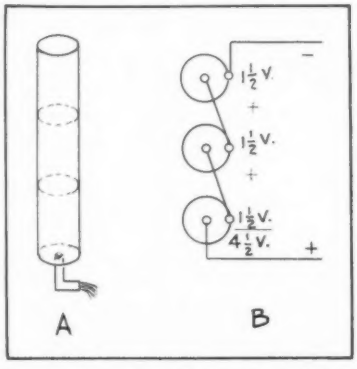


Fig. 3. Three dry cells in series will deliver current at a pressure three times that of one cell, but because of the higher rate of discharge will have an effective capacity equal only to one cell.

Best Story of the Week —What's Yours?

Kansas City (Mo.) now boasts a cocker spaniel pup with a passion for answering the telephone, reports the *Southwestern Telephone News*.

Her name is Gypsynelle, and she's owned by E. W. Russell of 3604 Park avenue. The Russell telephone is on a stair landing, and at the first sound of its bell Gypsynelle dashes up, noses the receiver off the hook, and barks enthusiastically into the mouthpiece. The Russells have tried to discourage her, but without much luck.

Some time ago the *Kansas City Star* ran a story about the pup, and gave the Russell telephone number: WAbash 4864. For a couple of days thereafter the families at WAbash 8464 and 4684 were kept busy answering callers who replied to their "Hellos" with a woof or a meow. It was pretty baffling until one of them figured it out.

In *Fig. 3-A*, a tank is shown with the same diameter as that shown in *Fig. 1*, but the height has been increased to equal that of three tanks, one on top of the other. Since the pressure is determined by the height of the liquid, the pressure in this case would be 4½ pounds, while the actual capacity would be 60 gallons. Due to the increased pressure, however, the tank would have an effective capacity of only 20 gallons because of the more rapid escape of the liquid under greater pressure.

To obtain this condition with dry cells, a series connection is used as indicated in *Fig. 3-B*. The pressure of one cell is added to that of the other cells, making a total of 4½ volts, while the effective current capacity, as illustrated by the tanks, is only 20 amperes. If the cells were connected into a circuit similar to that discussed under *Fig. 1*, we would have a pressure of 4½ volts at a discharge rate of one ampere per hour. The cells would operate the circuit for a period of 20 hours, as in the first case, but the pressure would be greater.

There is actually no standard method of testing dry cells to indicate their condition or workability while in service, since a telephone on a very short loop would give fair transmission with cells in a partially run-down condition. If the same cells were connected to an instrument on a long loop, poor transmission would result due to the increased line resistance.

Some troublemen have the mistaken theory that they can determine the condition of a cell by shorting its terminals and observing the strength of the spark obtained. While this could be used as some indication of the cell condition, a waste of many hours normal series will result since the momentary flow of current may be as high as 50 or 20 amperes. The normal discharge current through the transmitter is only a few milliamperes. When an ordinary ammeter is used, it, likewise, causes practically a dead short on the dry cell.

A simple test, known as the "blow up" test, is performed by shorting the line terminals and blowing into the transmitter while listening in the receiver. If the transmitter seems to "blow up" well, the cells evidently are in good condition. If the "blow up" is not strong the cells should be replaced. Often, faulty transmitters and receivers can also be detected in this manner.

The Plant Man's Notebook

By RAY BLAIN
Technical Editor

WE ENJOYED a very pleasant visit with F. G. GARDNER and H. D. HURLBUT, acting chief engineer and government representative, respectively, of the Kellogg Switchboard & Supply Co. while they were in Washington on national defense business.

* * *

It seems strange that so many telephone maintenance and construction trucks are not equipped with first-aid kits. These kits are inexpensive and may often be the means of saving a life. They should be carried on all telephone vehicles.

* * *

A profitable and enjoyable visit was had with HARRY J. BILLICA of Indiana Steel & Wire Co. while he was on a business trip through the East recently. We have been conferring with Harry for several years on long-span open wire telephone construction problems on which he is a leading authority.

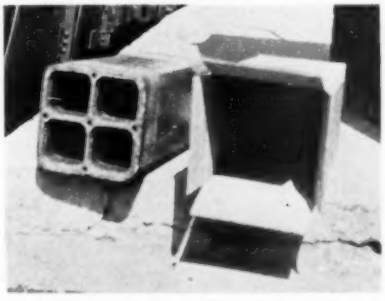
* * *

While watching a cable splicer at work not long ago, I heard him call to his helper to bring him a blow torch. I asked him about this as I had been informed that most companies had required their splicers to discontinue the use of all blow torches due to possible danger of gas in manholes. He replied that all torches had been taken from them by the company, but that splicers could not get along without them so they bought their own and kept them hidden as much as possible.

It would seem that, in view of this attitude of the splicers, telephone companies would authorize the use of blow torches for cable work provided certain safety precautions are observed. There seems to be no good reason why a blow torch cannot be used on aerial cable with safety. Positive tests can be made to insure the absence of inflammable gas in a manhole before entering it with an open flame.

* * *

The accompanying photograph shows how clay conduit may be packed in paper cartons for shipment. Various-



sized cartons are used to accommodate different types of conduit. This method of packing is especially recommended for export or other long-haul shipments where breakage, when packed by the usual method, may be excessive.

* * *

An object of extreme beauty is a combination handset telephone made of transparent lucite plastic. The beauty of this instrument is further enhanced by having all metal parts inside the set chrome-plated.

* * *

H. S. WILSON, of John H. Graham & Co., Inc., on a recent visit gave us some very interesting information on tree-trimming tools for telephone work.

Had a letter from my old friend, M. S. TREADWELL, Signal Corps telephone engineer in the Panama Canal Zone, stating that he has no difficulty in keeping busy these days, but intends to send in some items for this page.

AUTOMATIC STAPLE DRIVER: We all are familiar with the numerous difficulties experienced in the stapling of telephone house wire along baseboards to make a neat and trouble-free job. To perform this task well, a man should have at least three hands; one to hold the tack or staple, another the wire, and a third to wield the hammer. This difficulty has been overcome in the development of an automatic staple driver, now on the market, which may be used to advantage in securing house wire.

It is claimed that the proper use of this tool will reduce installation time considerably. A much neater job is also possible as the design of the machine permits its use in confined spaces, such as corners, behind pipes, between mouldings and other locations where it is not possible to drive tacks or staples with a hammer.

The staple driver uses strips of staples which are made of carbon tool

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steel and can be driven into hard surfaces such as wood and plaster. This tool is also extremely simple to operate and, through a special adjustment, the depth to which the staples may be driven is regulated.

This prevents damage to the wire insulation which is a most important feature to the telephone industry as much difficulty has been experienced from defective methods of wire attachment.

* * *

THE NEW DUCT RODDING OUTFIT, made of oil-tempered steel, is proving popular in the telephone field. It is claimed that while this new equipment costs only about half as much as some other outfits, it actually saves considerable time on the average duct rodding job. The wire may be obtained in any lengths although one reel of 400 feet and another of 300 feet will usually prove adequate for general telephone work. The wire is marked off in 25-foot sections which makes the location of duct obstructions a simple task.

This outfit is provided with a special fitting which permits the rod to be pushed into a conduit section from both ends. The pick-up fitting will cause the ends to couple when they meet and the wire can then be pulled out in either direction. This special feature permits extra long or crooked conduit sections to be rodded without difficulty.

Due to the ease with which this outfit can be used to rod ducts, it is not now considered necessary to leave pull wires in ducts. This is an advantage, for such wires usually corrode and become defective by the time they are needed anyway. Telephone companies should investigate the numerous advantages of this new telephone tool.

▼ ▼

Bell System Reports 81,300 Telephone Gain

A gain of about 81,300 telephones in service in the principal telephone subsidiaries of the American Telephone & Telegraph Co. included in the Bell System was reported for the month of July.

The gain for the previous month was 68,500 and for July, 1940, 22,400 while the net gain for seven months this year totals 754,800 as against 471,400 for the same period in 1940. At the end of July this year there were about 18,236,400 telephones in the Bell System.

The gain for July, 1941, was the largest for the month of July in the history of the Bell System, the next largest July gain having been 35,500 in 1923.

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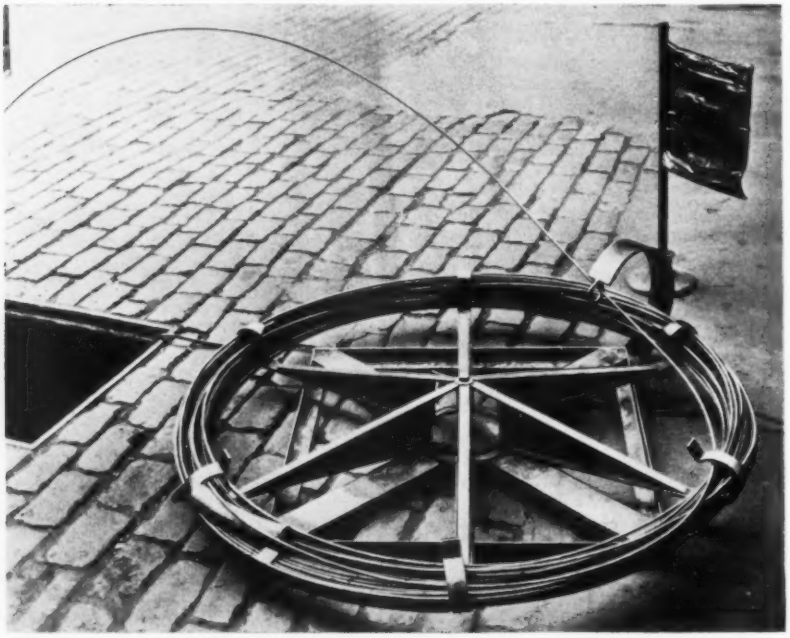
The English Way

Nassau, being English, has outdoor telephone booths. Instead of putting your coin into a slot above you, you insert it in a large box at your right. When the called party answers, you depress a button on the box. Until you do so, he cannot hear you, though you can hear him.



New duct rodding outfit for telephone work.

Bell Asks Employes to Reduce Toll Calls

With the number of long distance calls reaching new high levels, the American Telephone & Telegraph Co. has issued a request to the employes of the various Bell companies to hold back on the usage of long distance circuits. The suggestions made by the Bell System to their employes include the following:

First, make a greater use of the mail and the teletype. A great many items can be satisfactorily handled by letter, and a great many more can be speedily dealt with by means of the teletypewriter, which will bring a written reply in a hurry if one is needed.

Second, if it is essential to telephone, avoid calling between 10 and 12 o'clock a. m. or between 2 and 4 p. m.

Third, be brief. At present the average length of conversation on official intercity calls is nearly seven minutes —quite a bit longer than the public's average of less than five minutes.

▼ ▼

New Stock Issue by Michigan Bell

Michigan Bell Telephone Co. directors have authorized the issuance of another $5,000,000 in common stock, it was announced in July by George M. Welch, president.

The stock is the second block of $5,000,000 each issued by the company since the Michigan Public Service Commission last December authorized a $15,000,000 increase in the company's capital stock structure. The previous $5,000,000 was issued on December 31, 1940.

The stock is issued in connection with financing the company's plant additions, estimated to total more than $26,000,000 for the current year, largely due to the national defense program and accompanying industrial upswing, Mr. Welch said. The company's authorized capital stock is now $150,000,000, of which $145,000,000 has been issued.

▼ ▼

Exams Scheduled for Telephone Operators

Definite announcement of the date of the U. S. test for telephone operators is scheduled for August 23, and will include the entire state of Illinois.

All applicants should not fail to secure a copy of the "Question and Answer Book for Telephone Operators," price $1.50, on sale at the Civil Service News office, Room 316, 105 North Clark St., Chicago, Ill. This book will definitely aid those in successfully passing the examination.

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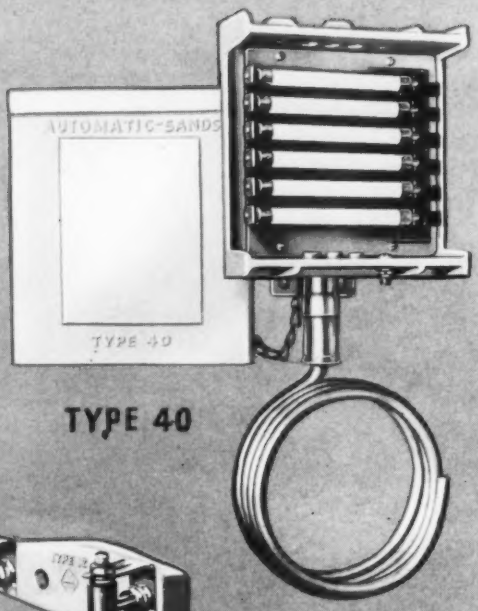

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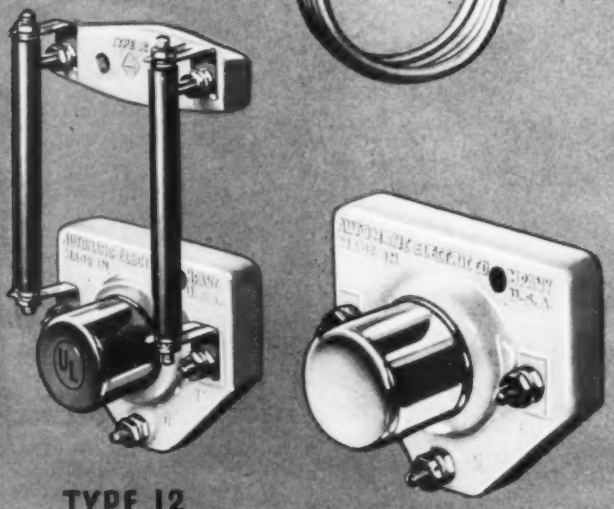

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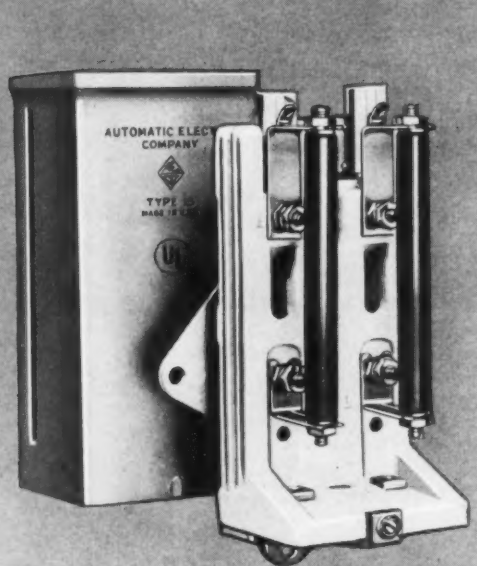

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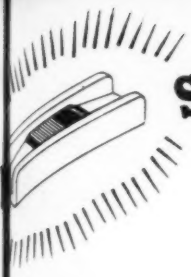

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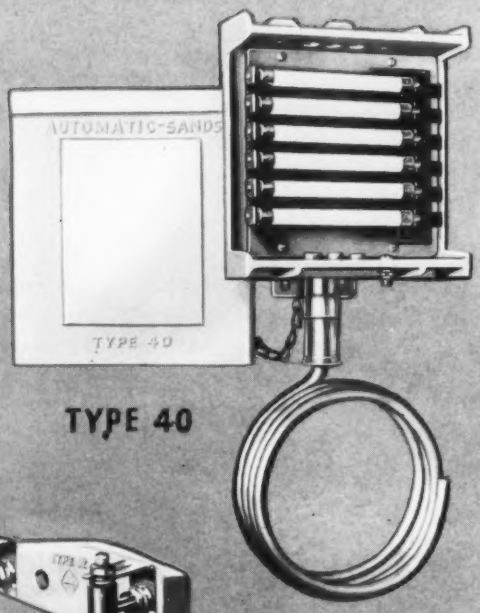

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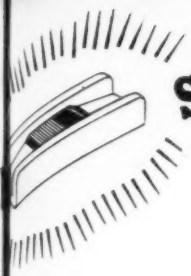

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Traffic Supervisor
The Illinois Telephone Association

THE WORD "clear," in telephone parlance, is used to indicate the action to be taken in order to make available to other operators a toll circuit which has been in use but is no longer required. The increase in toll traffic due to business expansion, the national defense program and other activities calls for wholehearted cooperation on the part of all operators in keeping the voice highways clear.

Speed and technique in advancing calls has an important bearing on the proper usage of toll lines. The chief operator can determine the efficiency with which the toll line plant is used by supervising the work of individual operators.

Some of the common faults in incorrect toll line usage on the part of outward operators are:

(1) Faulty ringing—especially rings of too short duration. (This necessitates subsequent ringing). (2) Failure to pass orders promptly and distinctly. An operator should be ready to pass her order as soon as the distant operator answers. (3) Failure to remain on the toll line until the called office answers. (This frequently occurs when an operator attempts to advance two or more calls at one time. It not only wastes toll circuit time but operators' time as well).

(4) Failure to have cleared circuit on a previous call. (5) The use of circuits which are not in service due to failure to designate properly circuits which are in trouble or in use for special services. (This is a common fault in many exchanges.) (6) Slow answers to supervisory and toll line signals. (7) Slow release of circuits. (8) Failure to take action required promptly. (9) Failure to clear built-up circuits. (10) Slow answers to TX signals and delay in taking action after signal is answered. (11) Circuit held or released improperly, and circuit released—no call advanced.

In order that toll lines may be released promptly, the chief operator should give careful attention to the following items: (a) Inattention and concealing supervisory signals with tickets or hands. (b) Failure to release as an overlapping operation. (c) Failure to ring immediately when the circuit is used for another outward call. (d) Delaying release of toll circuit until subscriber's line has been released. (e) Failure to release promptly after clearing built-up circuit. (f) Failure to use cord clips as prescribed. (g) Failure to pass clearance order correctly to the proper intermediate office and to obtain acknowledgment of the order.

The chief operator should recognize that slow or otherwise unsatisfactory inward or through service, while less apparent than a similar condition on outward, is far more reaching in its adverse reaction on the toll service as a whole because it affects all offices with calls to or through the office responsible.

Some of the primary requirements for satisfactory inward and through service are: (1) Prompt answer to first and subsequent signals. (2) Accuracy. (3) Speed in establishing connection. (4) Careful supervision of connections and readiness to assist when difficulty is encountered. (5) Prompt and proper clearance when the connection is no longer required.

Among other items affecting the operating use of toll lines are: (a) Failure of the operators to be familiar with information posted at the position. (b) Failure to quote the called number on address name calls in cases where the number is posted at the inward board. (c) Lack of familiarity with the out trunk multiple. (d) Failure to proceed rapidly from one step to another and to take advantage of opportunities to overlap. (e) Slow or inaccurate toll switching service. (f) Proper ringing with respect both to the duration and the spacing of individual rings. (g) Reduction of wrong numbers connected.

There are many other service items which affect the operator's toll line usage—too numerous to mention—but the foregoing will be a good beginning toward keeping the voice highways clear.

The combined effort of chief operators in all exchanges, large and small, will not only result in a saving of toll circuit usage but will achieve improvement in the quality of the service rendered.

Questions from Illinois Operators

1. When word is left on a call, is it necessary to write "LW" on the ticket?
2. On a call to another state, do we clear the circuit to destination or first station reached?
3. If you have a call for someone and he is not in but the calling party says he will talk to his brother and he is at a different telephone, do you have to make a new ticket?
4. On a built-up circuit, who clears the circuit after a WH report is passed and the call is completed?
5. What report charge do you use on a ticket when you have tried to locate a person in several towns and in more than one state?

The answers to these traffic questions are published on page 30.

Democracy's Constant Struggle

(Continued from page 10)

thinking the brains of the small number of rule-makers.

It is this kind of circle in human affairs that makes them defy solutions. It is this kind of thing that makes those who have never really had a belief in the capacity of mankind give up the struggle and seek the comfort of a definite answer in authority and uniformity —in short to accept a dictatorship or anything that will let them quit thinking and be rid of responsibility. They crave a formula, a theory, an answer to life. And when people get this way they are half licked.

So far, however, in this country we have had more courage in following freedom than have any other people. We have gone further than the democracies abroad.

We for the most part have been freer from taxes and freer in opportunity. Up until recently we have been more a low tax, high return, high opportunity, more or less classless society. In Europe the democracies have had equally the rights of free speech and religion, but they have had higher taxes, lower return for their thinking, less opportunity and a more stratified society, looking to security more on a pooled basis than an individual one because the individual's chance was less than here. And on the whole, they were more orderly.

Yet from their almost perfect state, many people used to be eager to come to our disorder for the extra freedom and opportunity it offered. The reason is plain enough.

If you translate the pursuit of happiness into the language of the common man, he had with us more opportunity to do as he pleased, plan for himself and his family with hope of success—and an hour of labor here would buy about twice the food that it would anywhere in Europe. He could earn a shirt here in an hour and a half that would take him four hours in England, and more than two days in Italy. He could earn three pairs of socks here in the time he could earn one in Germany, and a radio in less than half the time he could earn it anywhere in Europe.

There are those who think these results came because this is a rich country. Undoubtedly that gave the inventors, scientists, salesmen and engineers something to work on, but it was the incentives of freedom to think and work—each man for his own—that produced the result. Russia is a rich country, but Russia is a country where men only have had the liberty to do and to think what the Czar or Stalin wants them to. The pursuit of happiness there has but little chance of catching anything.

With us the race was to the swift but pretty nearly every one ran some and almost everyone who ran at all got some kind of a prize. I don't think we realized how successful our civilization was nor how completely the success was tied to the higgledy-piggledy method of progress that is inevitable in a country where all kinds of people have real liberty of thought, of action, of hope, and aspiration. The very lack of uniformity is the result and the evidence of the individual pursuit of happiness.

When the depression hit, many people temporarily lost faith in a process that depended on themselves. Mankind in such circumstances always want an answer, a panacea, safety.

That isn't a new kind of crisis. It has happened before, but it was aggravated this time by having the engineer's petard go off. That scattered a belief in formulas, and blue-prints all over the land. They called attention to the fact that engineers controlled the difficult forces of nature, that research could make two blades of grass grow where before there had been but one, that chemistry and electricity had revolutionized the world, that science was the magic by which everything could be planned including the hopes and fears of 135 million people. This idea had been gaining ground for some time. With the depression it became a religion.

The old engineers, like Ben Franklin, had mixed engineering with philosophy and observation of people. They had quite a lot of good ideas on physical subjects and equally useful ones on what makes people do as they do, but they had no idea that they could engineer humanity.

When our engineering schools had really gotten into full career they more or less abandoned the old subjects of humanity, for, except in

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medicine, no one seemed to get on with it with great rapidity. On the other hand, by careful study you could get something new on nature with startling frequency. In fact, almost any good man could add to the sum of human knowledge in science, whereas in other fields it was a tough problem. As a consequence, the scientific and engineering people got most of the citations in the army of education.

Every time they published a paper they got a new star. If you were not trained in the scientific method you were in a fair way to be sent to the rear. Old-fashioned scholarship had lost its flavor.

It was more than the humanists could stand. They changed their standard from political economy and the like to Social Science, to get in the charmed word "science." They more or less abandoned the application of the accumulated experience of mankind to the changing scene, and began counting and classifying the plumbing and automobiles of the population as a basis for judging human nature.

They figured that if two and two made four in mathematics it was bound to do so in human values also. There has been intense excitement in the solving of human problems by formulas, blue-prints and statistics when, in fact, no human problem is ever solved until the humans in question are dead.

Up to that time, human affairs have to be managed day by day continuously, and managed more by experience, judgment and a good sense of inherent probability than by statistics, blue-prints or surveys, however useful these may be.

Now I know that engineering education has turned toward more human consideration, but the idea of the omnipotence of planning had gained a fine foothold and it only needed an occasion like the depression to develop into a religion. Bright people again rushed forward to do all the thinking for the crowd. Again they began to tell every one what to do and how to do it. Under the name of liberalism, we headed back toward the old order wherein liberty was rigidly restricted.

Why did we think it would work now when it had not worked before? Because the scientist and the engineer had conquered nature. Because we could now with science plan anything. With science and engineering on the job we at last could blue-print the future of mankind and put our foot on the accelerator of progress in a planned and orderly world.

In the last 15 years we have had quite a number of people in many walks of life in business, in the colleges, in the government, who knew the answers to almost everything. Their picture of democracy was much like that of the man who organized a society for people to do as they pleased even if he had to make them.

But still the brains of the few won't cover the many any thicker than they used to do.

And so I earnestly beseech you to bring a suit against the scholars to make them return the word "science" to you who deal in material things, and to give up the slide rules, the formulas, the instruments of precision, and the engineering methods which when applied to materials had freed man, and when applied to man are in a fair way to enslave him.

And I beseech you to let mankind pursue happiness with as much freedom as possible and not ask him to fit his future to a provisional estimate worked out in a logical size and shape, but one for which God never intended him.

Years ago there was a story in New York of an Irishman recently landed who saw a good fight starting up in a saloon. With the instinct of European restraint he asked if it were a private fight or whether any one could get in. If he had been over a little longer he'd have joined without asking.

I hope we are not going to get into the state of mind where people are timid about taking a hand in the game of life, timid about thinking for themselves and doing for themselves and thereby making that real if disorderly progress in the pursuit of happiness which has been the salvation of this country.

I have a feeling that this depends in a large measure on the management of what we call private business. If it can continue to improve the average man's chances, continue to make use of more people's thinking and interest, I have no doubt we shall succeed.

The success of private management in making the pursuit of happiness a reality to the average man is the test of our democracy. The brains which, used in the science and engineering, give us the tools necessary to success have got to make progress in the more difficult art of managing human beings. And I have every faith that it will.

The success of America, which has been the most hopeful experiment in human history, has been the result of freeing more and more people to think for themselves, building

up more and more people to the responsibility for themselves, dignifying the individual so that he has the will to be the captain of his soul and of his fate.

In such a free country mankind slowly grades up, both in general capacity and in leadership. On the other hand, as freedom is circumscribed mankind tends to grade down and leadership to dwindle until it falls into the hands of a few people or a dictator.

We are witnessing an industrial contest between two systems; one in which there is the responsibility to participate as free men under the multifarious leadership such a society builds up, and the other where men are ordered to participate under the leadership circumscribed by the limited thinking of a few.

For those who have any faith in mankind there can be no doubt of the ultimate outcome. Nor can there be any doubt of the duty of American industry to demonstrate the values of a free civilization as well as to save it.

EDITOR'S NOTE: *Mr. Page's article was a talk given before a recent meeting of the Engineering Societies of Western Pennsylvania at Pittsburgh.*

▼ ▼

In the Nation's Capital

(Continued from page 12)

cases, such as a sudden breakdown, accident, fire or storm damage.

The A-10 rating can be applied *only* to deliveries of maintenance and repair parts, as defined in the order, to be used in the plant which has been granted the rating. It may *not* be used to obtain materials flowing into production, may *not* be used to obtain excess inventories of maintenance and repair parts, and may *not* be used to obtain parts or materials for plant expansion.

Representatives of the Priorities Division and the Office of Price Administration and Civilian Supply have worked out the plan and have agreed on the initial nine industrial classifications to be included. As the plan gets under way, other industrial classifications will be added to the list and announcements will be made of all such additions.

Mr. Stettinius pointed out that the new plan will not only benefit essential industries which have need of repair and maintenance parts, but it will also aid some suppliers and producers to qualify under the Defense Supplies Rating Plan. The Defense plan provides special ratings for certain producers based on that percentage of their production which is clearly covered by defense orders.

If a supplier accumulates a number of preference rated orders under the maintenance plan, for example, he can then use these orders in calculating the percentage of his business that is defense. When such a supplier can demonstrate that a substantial percentage of his business is defense, he can then enter an application for use of the Defense Supplies Rating Plan.

An example of how the maintenance and repair plan will work in a typical case is as follows:

Suppose a metallurgical plant, a smelter, applies for and is granted the use of the maintenance plan.

A little later a pump in the plant wears out and a new valve is needed.

The plant can then serve its preference rating order on its supplier of valves. The supplier will have to recognize the preference rating in meeting the required delivery date.

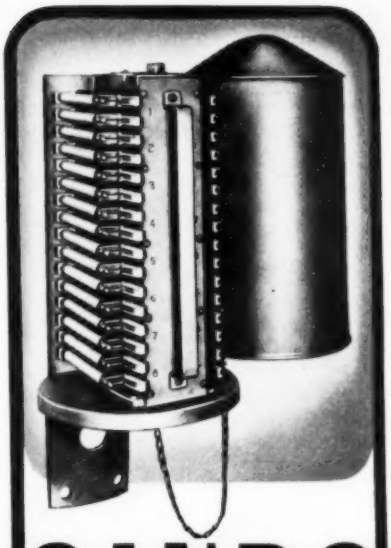
The supplier will also be benefited because he can either extend the rating directly or else can use the order served on him in qualifying under the Defense Supplies Rating Plan.

If the same plant needs additional valves in the future, it can apply the rating by citing the original order's serial number in placing contracts.

Field offices of the Priorities Division, where information about the plan may be obtained, are given on page 12.

About the only explanation your correspondent could get as to why telephones and telegraphs were omitted from the first list of preferred maintenance ratings was simply lack of Federal personnel. OPM, as well as OPACS, is a mushroom organization. But fast as it is growing, it is still behind in the administrative needs of the tremendous field that it must cover. (It appears that the Priorities Division is setting up some sort of a control organization within itself for checking on each industry as it is classified.)

About 200 new hands are due on deck within the next month. So it would appear that the telephone business will be classified for purposes of maintenance priority just as soon as personnel organization can get around to it. This does not necessarily mean that it will be another month before the telephone business gets its "A-10" along with the rest of the public utility family. But it would be well not to plan on it too



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heavily before the expiration of that interval.

* * *

From time to time interpretations of the Wage-Hour Act come along which may be of collateral application to individual telephone organizations subject to the law. Here are three such fairly recent interpretations:

(1) *Section 18* of the Fair Labor Standards Act says that nothing in that act should be interpreted as justifying a reduction in wages. Notwithstanding this provision, the division has ruled that employers *may* reduce rates of pay in order that payment of overtime as required by the act will not increase their payroll.

For instance, suppose an employe is getting 86 cents an hour for a 48-hour week, or $41.28. Under the law he is entitled to overtime in excess of 40 hours but not to such a high rate per hour. Thus, at the old rate per hour of 86 cents, the overtime would bring the weekly pay up to $44.72. Hence, the boss can cut the hourly rate to 80 cents which gives the employe $41.60 — only slightly more than he received before.

(2) Annual "bonus" payments having no relation to wage scales, seniority, or special services, but awarded simply as a token of esteem at the discretion of the employer, will not be considered a part of the employe's regular rate of pay for purposes of complying with the Fair Labor Standards Act. Otherwise, bonus payments will be considered together with regular weekly earnings in order to determine the rate of payment for overtime. Thus, an employe who received $35 weekly wages, plus a $5 bonus for a 40-hour week is entitled to overtime on the basis of $40 a week.

Purpose of this interpretation is to prevent the manipulation of wage reductions and the substitution of bonus payments to avoid full overtime payment on the employe's regular basic wage for a 40-hour week.

(3) A U. S. District Court in Puerto Rico early this year (Fleming *v.* Caribbean Embroidery Corp.) ruled that a cooperative association of embroidery workers was a bona fide cooperative organization and not a subterfuge to evade the Wage-Hour Law. However, the Wage-Hour Division is fighting the decision in the higher courts and may well prevail. The division's position on so-called "cooperatives" is this: Where they are composed of an employer and his former employes; where the ex-employe "members" receive the same substandard compensation they did before; and where the former boss takes an important position in the affairs of the "cooperative" — then the whole set-up will be considered merely a frame-up to evade the Wage-Hour Law.

* * *

P. S. Harold J. Cohen has been appointed to succeed Harry Booth as acting chief of the telephone rate section of the FCC. Cohen was formerly Booth's assistant . . . A bill to divorce radio from telephone regulation through a reorganization of the FCC, similar to that recently introduced by Senator White of Maine (described in this department last week), has been introduced in the House of Representatives by Congressman Sanders, Dem., Louisiana and member of the House Interstate and Foreign Commerce Committee . . . The Administration's price control bill (H. R. 5469) contains a provision to the effect that the act shall not apply to "the rates of common carriers and other public utilities."

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General Gains 3,322 Stations in July

General Telephone Corp. reports for its subsidiaries a gain of 3,322 company-owned telephones for the month of July, as compared with a gain of 1,465 telephones for July, 1940. The gain for the first seven months of 1941 totals 26,147 (exclusive of purchases and sales) or 4.91 per cent as compared with a gain of 16,240 telephones or 3.24 per cent for the corresponding period of 1940.

The subsidiaries now have in operation 558,173 company-owned telephones.

Railroad Telephone Men To Meet in Cincinnati

The 22nd annual session of the telegraph and telephone section of the Association of American Railroads will be held September 23, 24 and 25 at Hotel Gibson, Cincinnati, Ohio, according to an announcement by W. A. Fairbanks, secretary of the section.

The program includes the reports of seven committees and the presentation of papers, including one on "Some Recent Developments in Outside Plant Practices," by C. G. Sinclair, Jr., of the American Telephone & Telegraph Co.

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Commissions and Courts

Suit Would Enjoin Giving Number to Competitor

A suit was filed in the Franklin county (Ohio) common pleas court today by Robert Dingledine, doing business as the National Dry Cleaning Co., 2501 Cleveland avenue, Columbus, Ohio, seeking to enjoin the Ohio Bell Telephone Co. from assigning the telephone number LA-6128 in its Lawndale exchange, to a competitor.

He charged in this action that on May 3 he purchased a dry cleaning establishment at 2489 Cleveland avenue from Gary Nichols, and since that time has transacted much business over the telephone.

The plaintiff further charged that the telephone company had notified him that his number will be changed, and asked that the company be enjoined from assigning the telephone number to Nichols because it would injure his business.

▼ ▼

Michigan Bell Refunds $10,630 to Patrons

The Michigan Bell Telephone Co. recently reported to the Ingham county circuit court that it had made refunds aggregating $10,630 between June 26 and July 12, 1941, in accordance with a court order upholding reduction of intrastate long distance tolls to the level of interstate charges.

The refunds were said to have been made by credits to undisputed current and past due accounts of 826 subscribers, including all interest payments and message tax refunds required by the court.

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Ohio Rate Revisions Advised by Secretary

The secretary of the Ohio Public Utilities Commission on August 9 filed a report with that body on his investigation of the application of the Ohio Bell Telephone Co., following the inclusion of Bedford, Berea, Brecksville, Chagrin Falls, Gates Mills, Hillcrest, Independence, North Royalton, Olmsted Falls, Strongville, Terrace, Victory Westlawn, and Wickliffe exchanges in the toll-less Cleveland metropolitan service area, to increase the monthly charge for extra listing of business subscribers from 25 to 50 cents to conform to the Cleveland exchange tariff.

The report confirms the allegation in the application that all of the 17 subscribers now using such service have evidenced their willingness to pay the increase by signing an application for the continuance of their extra listings. Copies of the report have been certified to the company, prosecuting attorneys of the counties, and mayors of villages affected.

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Higher Telephone Rates for Tilden (Neb.) Exchange

Sharp increases in the rates for local battery service at its Tilden exchange has been granted the Nebraska Continental Telephone Co. by the Nebraska State Railway Commission. Present common battery rates for business and residence service were not changed. Revenues have been insufficient to pay actual costs of operation and taxes, and the company as a whole has averaged a return on its investment for the past five years of less than 3 per cent.

Net rates for common battery service remain at $3.75 for business and $2.75 for residence. One-party business, local battery, for wall or desk has been $2.00 net, and for handset, $2.25. These have been increased to $3.25 and $3.50 respectively. Extensions have been increased from 50 and 75 cents to $1.00 and $1.25 respectively, which are also increased rates for common battery extensions.

The one-party residence handset rate of $2.00 has been increased to $2.25, while the rate for desk or wall service is increased from $1.75 to $2.00. Grounded rates are eliminated. Four-party rates are increased from $1.00 for grounded service to $1.75 for metallic service. The ten-party rural grounded residence rate is increased from $1.00 to $1.75 with a rural ten-party business rate of $2.50 offered. Full 24-hour service is to take the place of 16-hour service. Switch-

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ing charge is raised from 42 to 60 cents a month.

The commission finds a reproduction new cost of $34,719, to which is to be added $5,420, the cost of metallicizing rural lines. Protestants had attacked the appraisal value, but the commission says that any difference in values would be offset by increased costs in recent months of materials and supplies.

▼ ▼

Colorado Court Probes Copyright Infringement

On June 9, the district court of Colorado rendered a decision that the copyright of the Mountain States Telephone & Telegraph Co. for the telephone directory for Denver and adjoining towns was infringed by the publication and distribution of a criss-cross telephone directory which was necessarily copied from the company's directory by Fred F. Donnelly, R. Lockard and R. E. Bryant.

A permanent injunction was granted restraining infringement of the telephone company's copyright not only in and to the particular directory involved, but in and to any and all directories published by it for which it holds, or may hereafter hold, copyright.

The defendants were permanently restrained from otherwise interfering with the business of the telephone company by printing, publishing, selling or distributing, or causing to be printed, published, and sold or distributed any directories containing names of the company's subscribers, telephone numbers, addresses, or combinations thereof, of persons, customers or subscribers served by the company, the information for which has been obtained from any directory of the company for which it has acquired, or in the future may acquire, a copyright.

▼ ▼

Final Hearing Held on Three-Cornered Oklahoma Case

Final hearing was held July 31 before the Oklahoma Corporation Commission on the three-way legal controversy between the Southwestern Bell Telephone Co. and the Drummond Telephone Co. on one side, and the Oklahoma Rural Telephone Co. of Enid, Okla. on the other, over the right of the latter company to establish a telephone exchange in Drummond and to demand toll connections with the Southwestern Bell company.

For years the Southwestern Bell has furnished toll connections to the Drummond Telephone Co., of which H. H. Harris is owner. When the Oklahoma Rural established a rival local exchange in Drummond the Southwestern Bell refused to give it toll connections, contending that the Harris exchange was providing adequate toll service there.

The question arose at previous hearings (TELEPHONY, June 14, p. 22) whether the Oklahoma Rural Telephone Co. is really a cooperative organization, as it claims to be. Another matter questioned the jurisdiction of the corporation commission over the controversy because of the alleged cooperative status of the Oklahoma Rural company.

At the hearing on July 31, the Southwestern Bell presented testimony and documentary evidence in an effort to prove that the Oklahoma Rural ceased to be exclusively a cooperative concern when it placed its exchange in Drummond.

A list of subscribers and stockholders of the Oklahoma Rural Telephone Co. was introduced for the purpose of showing that the Enid concern really is serving some non-stockholders from its Drummond exchange and, therefore, is a private concern required under the law to secure a certificate of convenience and necessity from the state commission before it can compete with existing facilities furnished by H. H. Harris at Drummond. The commission took the case under advisement.

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Ohio Family Sues Bell Company

A Madison (Ohio) township family filed suit for $2,000 in Common Pleas court on July 29, against the Ohio Bell Co., alleging loss incurred when company crews installed an underground cable across their farm.

▼ ▼

New Secretary for Nebraska Commission

The Nebraska State Railway Commission has announced the appointment of Einar Viren of Holdrege as secretary. Mr. Viren has been serving in a temporary capacity since January 14. He is an attorney by profession, and was formerly an examiner in the commission's motor transportation division.

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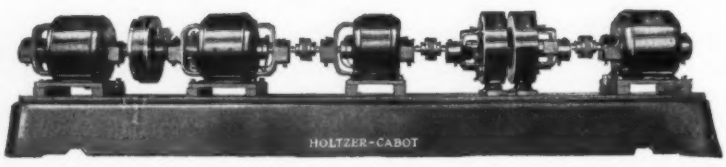
Summary of Commission Hearings and Rulings

Federal Communications Commission

July 25: Authority granted the Southern Bell Telephone & Telegraph



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WISE SALES TIPS

Why Do People Buy?

By W. L. HUDSON

THE ONLY kind of sale worth making, in my opinion, is where the buyer is benefited. This is not altruism (although I believe in that, too) but good business. A person will only buy *and be satisfied* with what he needs. But Webster's definition that "need" means something like "dire necessity" does not apply as we commonly use the word in sales work.

We say a man *needs* a haircut, but he could probably live his life just as well with long hair. What we mean is that his hair is longer than is customary for men to wear their hair. Therefore, many of our "needs" are simply to conform with custom.

One man buys a straw hat because it is cool, another because he likes it, and still another because most men wear them. *But each wants the hat for a reason* and, therefore, from his viewpoint he needs it.

Some weak souls can be bluffed or shamed into buying something they don't want; but they will not come back for more, hence, such sales are harmful. People only buy and are satisfied with things they want.

Through salesmanship we can get an individual to want the article we are selling by showing how it will do him some good. If it will do him some good we should be able to convince him; if it won't do him any good, we shouldn't expect him to buy it.

[EDITOR'S NOTE: *This is the fifth article in a series; the others appeared in the issues of April 26, May 3, June 7 and July 26.*]

Co. to purchase the property of the Collierville (Tenn.) Telephone Co.

July 29: Granted special permission to publish and file schedules of charges on not less than one day's notice, without regard to the requirements of Section 61.59 of the commission's rules amending its tariff FCC No. 143 to change rates applicable to local channels for press-private line teletypewriter service at Taft, Calif.

Indiana Public Service Commission

July 23: Petition filed by Crown Point Telephone Co. for permission to sell and Illinois Bell Telephone Co. to buy certain property of the Crown Point Telephone Co. located in the vicinity of Cedar Lake.

August 8: Petition filed by Frank Maris of Kingman and Lee J. Maris of Attica for permission to sell the Kingman Telephone Co., the Cates Telephone Co., and the Silverwood Telephone Co., which they own, to a newly-organized company known as the Wabash Valley Utilities Corp., Greenfield, Ind.

Nebraska State Railway Commission

August 9: Supplemental order was issued fixing the 1941 over-all composite depreciation rate for the Nebraska Continental Telephone Co. of Columbus at 3.5 per cent, the same as for 1940.

August 9: Supplemental order was issued fixing the 1941 over-all composite depreciation rate for the Lincoln Telephone & Telegraph Co. at 3.5 per cent, the same as for 1940.

Ohio Public Utilities Commission

August 1: Hearing on application of the Ohio Central Telephone Corp. to abandon its line extending to Charm protested by H. J. Lacey, the subscriber to whose residence the line extends.

August 9: Authority granted the Ohio Associated Telephone Co. to revise its Bryan exchange schedule by removing the following unused services: "Service stations minimum number per line, 6" and "Service line mileage, 50 cents per one-quarter mile" and to amend "PBX stations, business, Class A, B, C and Types 1, 2, and 3, Class E systems, $1.00" to read "PBX stations, Business, Class A, B, C, and E systems, $1.00."

August 9: Ohio Bell Telephone Co. seeks authority to increase rates in the toll-less Cleveland metropolitan service area exchanges.

August 15: Hearing on petition of Oil Belt Telephone Co. to abandon its exchange at Rudolph and to hereafter furnish the 82 subscribers now served there with rural service from the Portage exchange.

Pennsylvania Public Utility Commission

July 23: Hearing at Erie on investigation of the rates of the Pennsylvania Telephone Corp.

Wisconsin Public Service Commission

August 7: Hearing at Madison on application of Community Telephone Co. to increase rates at its Westfield exchange.

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GRAY PAY STATIONS
For
Additional Revenue

Type 34-A-11 Handset Pay Station

This handset-type pay station is typical of the Autelco-equipped Gray line—combining the standard Gray coin-collect mechanism with the superior Automatic Electric transmission circuit and components.

The 34-A-11 is of the post-pay automatic type. It requires no special line equipment at the central office, and will operate with all boards having reverse-battery connectors. Arranged for Type 24A36 dial, extended number plate, and Automatic Electric handset and anti-sidetone circuit.

Circular 40-10 describing this and other types of Gray paystations will be sent on request.

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- Easy installation
- Easy expansion

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Personals

THOMAS C. SHEDD, JR., associate editor of TELEPHONY, left the staff August 1 to accept a position in the detector car (rail testing) service of the Association of American Railroads. He entered TELEPHONY'S employ on September 1, 1940, and showed such aptitude for the work and editorial responsibility that he was made associate editor February 1 of this year.

Mr. Shedd was graduated in 1940 from the University of Illinois, with a bachelor's degree in Railway Electrical Engineering.

•

H. J. HUETHER, JR., general commercial superintendent, Pennsylvania Telephone Corp., Erie, Pa., has been elected vice president of that company. Mr. Huether has served in his present capacity for the past several years. Prior to going with the Pennsylvania company he served as telephone engineer of the Pennsylvania Public Utility Commission.

•

LELAND WRIGHT, manager of the Alexandria (Minn.) Telephone Co. has been confined in a Mankato hospital where he will remain for a few weeks. His physician has ordered "rest and quiet." His friends in the telephone field wish him a speedy recovery.

•

W. S. ARGABRIGHT is the new manager of the Kingsport, Tenn., exchange of the Inter-Mountain Telephone Co., having succeeded Aubrey Woolford who was called into military service in May.

Mr. Argabright had been manager of the Elizabethton exchange and while living in that city had been active in civic affairs. He served as treasurer of the Chamber of Commerce, vice president of the Rotary club, and editor of the Wigwam, district Boy Scout paper.

•

HUGH A. BARNHART, president of the Rochester (Ind.) Telephone Co. has been appointed director of the department of conservation of the state of Indiana. Mr. Barnhart is the son of the late Congressman Henry A. Barnhart, former president of the Rochester Telephone Co. and former president of the Indiana Telephone Association.

He has been in public life since 1932 when he served as a member and director of the state's highway commission. At the time of his appointment as the conservation department's head he was excise administrator of the alcoholic beverages division of the state. During his college life he won fame on the basket ball floor and gridiron of Indiana University.

•

W. N. CURTIS, general manager of the Missouri Telephone Co., Columbia, has a new tale to add to his after-dinner stories. During a fishing trip on South Turtle Lake near Winchester, Wis., he caught two large muskies, one measuring 40 inches and weighing 20 pounds and another 38 inches in length and tipping the scales at 18 pounds.

•

GEORGE M. WELCH, president of the Michigan Bell Telephone Co., was awarded the honorary degree of Doctor of Business Administration at the annual commencement exercises June 21 at the University of Michigan.

With the honorary degree came the following citation: ". . . Mr. Welch has demonstrated his capacity to direct the manifold affairs of a rapidly growing industry in accordance with the highest ideals of modern business and its relation to the public good. Among the marvels of scientific discovery, organized and developed by farseeing executives, none remains more indispensable to the needs of civilization than the mechanism which sends voices and even images swiftly and clearly through the wide spaces of the world."

•

When **FRANK ROBERTS,** Dothan, Ala., repairman for the Standard Telephone & Telegraph Co. was summoned to the G. C. Batchelor household to investigate why a telephone was off a hook, he was unable to gain entrance. Sensing something was wrong he secured police aid and they entered through a window—to discover Mr. Bachelor, 70, a retired railroad worker, lying unconscious, the victim of a stroke.

A handset telephone had been removed from the stand at his bed, and it was believed that Mr. Bachelor had endeavored to summon aid at the time

he was stricken. A telephone operator was said to have heard a person moaning just before the repairman was sent to the home. The unconscious man was taken to the hospital where he died a few days later.

•

MISS MANTA J. ELDER, chief operator of the Southwestern Bell Telephone Co., Ottawa, Kans., has the sympathy of the telephone field in the recent loss of her father, J. T. Elder, 88, who died July 26, after a long illness. He had been an invalid about ten years since he suffered a stroke, and his condition lately became critical. Surviving, besides Miss Elder, are two daughters and three sons. Miss Elder's mother passed away February 22, 1940.

BOOK REVIEW

A TELEPHONE RATE CASE, by E. D. Smith. Published (1941) by Public Utilities Reports, Inc. Price $5. 223 pages.

The modern telephone rate case is unquestionably "everybody's party" in the typical utility organization. The engineers must furnish appraisal data; the accountants must bring up the cost figures. Details of management technique and operating policy require other officials to play their part. The general attorney or trial counsel is simply the director or producer, so to speak, of the company's presentation before the regulatory commission or appellate court.

Yet the usual books on regulatory procedure are those written by lawyers, for lawyers, and—all too often—understandable only to lawyers. If an occasional engineer or other professional wanders into the regulatory field, he, too, is more than likely to adopt the legalistic approach which can be so baffling to the layman.

That is why "A Telephone Rate Case," written by Edward Devereux Smith, vice president and general counsel of the Southern Bell Telephone & Telegraph Co., is a different book. Mr. Smith is a lawyer, of course, having received his LL.B. from Georgetown University (following an A.B. from Alabama University) before the turn of the century. But he is also a practical writer about handling a rate case. His book is not only a handy manual for the practicing attorney but a plain and simple authority for company officials and company employes whose duties require them to participate.

Mr. Smith gives a bird's-eye view of the general regulatory background. What is a utility (Chapter I) at common law and by modern statute? What is all this "fuss" about fair value (Chapter II)? What is a reasonable return (Chapter IV) and a reasonable rate to the public (Chapter V)?

One is impressed, in reviewing the fresh treatment given to these hackneyed subjects, by the sheer objectivity of the author. He holds no brief for any doctrine and nurses no theories. He gives the reader the law exactly as he finds it. If there is a conflict, he tells about that too.

The final chapter (IX) on the preparation of a telephone rate case will be found most helpful to everyone concerned in a telephone rate case. The part each must play is outlined: the function of the company books and records, the general statement of cost studies and their preparation, the testing of reports through sampling, the qualification of expert witnesses, the development of percentages for the separation of toll costs, and a wealth of other detailed, matter-of-fact information which one cannot get out of the average ponderous legal or economic treatise on utility rate-making.

Other chapters cover the treatment of revenues and expenses, the separation of allocations of local, intrastate, and interstate business, the set-up of Bell intercorporate relations and procedure for obtaining regulatory relief in the courts.

Mr. Smith has selected for discussion issues which are normally encountered in a typical state-wide rate proceeding of a telephone company. His case references are recent (down to January 1, 1941), carefully selected (superfluous duplication of authority on the same point being excluded), and are not entirely confined to telephone cases (where other utility precedent constitutes prevailing authority). The work lacks a subject index, but the voluminous table of contents, together with the integrated sequence of the development of the subject, is a fairly satisfactory substitute. There is a comprehensive table of case references.

Copies of this book may be ordered through TELEPHONY.

Monument to the Telephone

According to John U. Hiltz, Laramie, Wyo., the intent and purpose of the monument on U. S. route 30 in Wyoming, between Laramie and Cheyenne, is to commemorate the first long distance service between those two points which occurred six years after the telephone was invented. Due to inaccurate information, it was stated in the July 19 issue that the monument was established in commemoration of the first telephone pole set on the Lincoln Highway.

The competition towered forbiddingly high back in 1911, when L-M hung out its shingle, youngest, smallest manufacturer serving the utilities. But the 37th inch on the L-M yardstick—personal attention—somehow seemed to compensate for early limitations...led to the L-M research division with its long list of notable contributions to improved equipment and service.

Today the L-M trademark is a veteran of 30 years on the line, a guarantee of dependability in pole line construction materials. Because the nation-wide facilities of Automatic Electric assure fast, efficient service on every L-M order . . . because the "37th inch" is still an intangible "extra" of every L-M product, more telephone men than ever before are specifying L-M Pole Line Hardware and Telephone Construction Specialties.

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- **BATTERY CHARGERS:** for trickle charging telephone batteries.
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Pratt, Kans., Gets New Kellogg Switchboard

For 10 years the Southwest Telephone Co. had planned and worked towards improving telephone service in its exchange at Pratt, Kans. This ambition was fulfilled recently, when it replaced its 27-year-old switchboard with a new 12-1600 Kellogg Masterbuilt switchboard.

The cutover was an impressive ceremony, with various civic officials present and the mayor himself throwing the switch that cut the new board into operation.

In a speech made at the ceremony, Walter Pedigo, president, Southwest Telephone Co., said: "Progress in all lines of endeavor has been so fast the past few years that only those engaged in any business or profession are able to keep abreast of it . . . and we all have a silent obligation to keep our services as modern as possible.

New Kellogg Masterbuilt switchboard in modern operating room of the Southwest Telephone Co., Pratt, Kans.

"Modern switchboards do not grow on trees and it has taken some courage for us to make the purchase of this modern equipment. In bringing to Pratt the latest and most efficient telephone service that is available," Mr. Pedigo concluded, "we feel that our labor and investment will be justified, and we believe this new equipment which we have so painstakingly assembled here will be appreciated by this community."

Following Mr. Pedigo's speech, a signal was given to the men in the terminal room, who began cutting tie cables

Cutting in the new 12-position switchboard at Pratt, Kans. Left to right: C. M. Robinson, Kellogg installer; L. A. Helsel, traffic superintendent; Mayor Guy Sitton; Walter Pedigo, president, Southwest Telephone Co., and Ernest L. Hilliard, plant superintendent.

Answers to Traffic Questions on Page 20

1. This entry is not necessary.
2. The circuit should be cleared to the distant toll center. However, if the toll circuit is connected to a ringdown trunk at the terminating toll center, the circuit should be cleared to the called place.
3. A call to a different party at a different station constitutes a new call.
4. The originating toll center operator is responsible for the clearance.
5. If the call is canceled, the highest report charge incurred will apply.

SUB-CYCLE

The Master Ringing Converter

Embodies Efficiency, Economy and Dependability Under Severe Operating Conditions At All Times

- No Moving Parts
- Nothing to Adjust
- Economical
- Quiet

EXCLUSIVE FEATURES

Six Models for Loads Ranging from the Small PBX to the Large Central Office

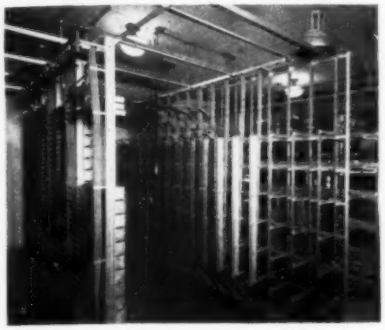
Prices $32.00 to $93.50

Also Pulsators

Facts about Sub-Cycle are yours for the asking.

LORAIN PRODUCTS CORPORATION
LORAIN, OHIO
Sold by Leading Distributors

that had connected the new board with the old. After six men had snipped 940 pairs of wires and pulled yellow twine from under contact springs in the relay rack, Mr. Pedigo was signalled by L. A. Helsel, traffic superintendent, that the board was ready for connection with its hundreds of patrons. The president gave a signal to Mayor Guy Sitton, who threw the switch at 2 P. M. The actual cutover took only one minute and fifteen seconds.



New relay and protection equipment at Pratt, Kans.

The new switchboard is a 12-position Masterbuilt with 10 positions equipped. Eleven hundred of the total capacity of 1,600 lines are being used at the present time. The first six positions on the left are toll. Next is the rural position, with the three local positions on the right. The local lines are common battery, while the toll and rural lines are lamp signal magneto. Universal cord circuits are used on rural and toll lines so the operators can connect to either common battery or magneto stations.

▼ ▼

Selenium Output Shows Increase

Another of the interesting sidelights of the national defense program is the fabulous increase in the refinement of pure selenium in the United States which, according to George Lewis, vice president of International Telephone & Radio Manufacturing Corp., has increased 100-fold this year over last.

Selenium is one of the lesser known of the physical elements but is employed in the manufacture of red glass, certain pharmaceutical products and now in the I.T. & T. selenium rectifiers, which are being used extensively by various national defense suppliers. The application of selenium in rectifiers was developed by a subsidiary of the International Telephone & Telegraph Corp. in Europe. Mr. Lewis says that while an impression has existed that selenium is a European material, the fact is that practically all of the world's supply is obtained in the United States and Canada.

▼ ▼

Cable Research Director of American Steel & Wire

Thomas F. Peterson has been appointed director of electric cable engineering and research of American Steel & Wire Co., subsidiary of the United States Steel Corp. His office will be located at the company's headquarters in Cleveland, Ohio, where he will be connected with the office of the vice president in charge of operations.

Mr. Peterson joined American Steel & Wire Co. in 1927 as cable engineer in the new York office. Later he was promoted to electrical engineer, and in 1931 was transferred to Worcester, Mass. In January, 1937, he was appointed director of electrical cable works at Worcester, which position he has held until the present time.

▼ ▼

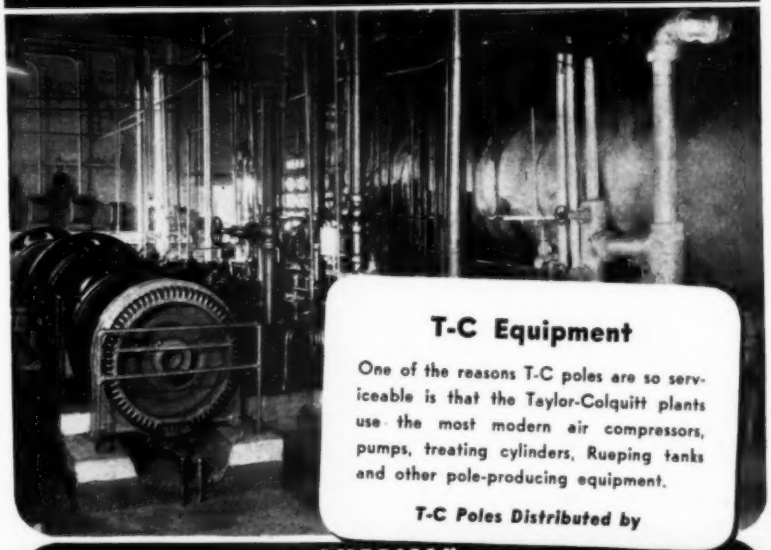
McIlvane Sales Manager Of Copperweld

The appointment of William J. McIlvane as general manager of sales of the "Copperweld" Division of the Copperweld Steel Co., Glassport, Pa., has been announced by President S. E. Bramer, effective August 1. He was formerly eastern district manager and later sales promotion manager for Copperweld.

WM. J. McILVANE

Mr. McIlvane succeeds Robert J. Frank who resigned as vice president in charge of sales on July 31. Mr. Frank will continue as a vice president and director of the company.

TAYLOR-COLQUITT CO.
CREOSOTED PINE POLES



T-C Equipment

One of the reasons T-C poles are so serviceable is that the Taylor-Colquitt plants use the most modern air compressors, pumps, treating cylinders, Rueping tanks and other pole-producing equipment.

T-C Poles Distributed by

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BRANCH WAREHOUSES AT DALLAS, KANSAS CITY, LOS ANGELES, RICHMOND (VA.) AND SAN FRANCISCO

"Telephony's" Engineering Data

By J. Ernest Hartz

Index, Underground Conduit Construction. August 16, 1941. No. 3-B, page 10.

Materials and Equipment for Underground Conduit Construction (Concluded)

Shields: *Expansion shield* for ½ by 2½-inch machine bolt.

Strainers: *Manhole drain strainers.*

Straps: *2⅝-inch cable straps.*
3½-inch cable straps.
No. 2D pipe straps.
No. 2S pipe straps.
No. 3D pipe straps.
No. 3S pipe straps.
No. 2U cable guard straps.
No. 3U cable guard straps.

Traps: *Six-inch vitrified clay "P" traps* for connecting manhole to sewer.

Wire: *No. 9 B.W.G. galvanized iron wire* to be placed in ducts which are expected to be used initially or early in the future for the purpose of pulling cable into them. Pulling in wire should not be placed in spare ducts not to be used for some time as it will rust; in any case the ducts can be rodded when necessary.

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TRANSMITTERS

Repair service for Transmitters, Receivers, Desk Stands and Wall Phones—Magneto or Common Battery.

Coil winding, enameling and general rebuilding of Telephones, Switchboards and Parts.

We carry in stock: NEW MOUTHPIECES, RECEIVER SHELLS, RECEIVER, DESK STAND AND SWITCHBOARD CORDS AND PLUGS.

The Finest Line of NEW OAK TELEPHONE CABINETS for rebuilding Wall Phones and Desk Sets ever offered and at the lowest prices.—ANY QUANTITY ONE TO ONE THOUSAND.

Obsolete wall phones or parts rebuilt into modern wall or desk phones with new cabinets.

Telephone Repair Co.

Daniel H. McNulty, Manager

"Free Bulletin"

Rogers Park Station Chicago

"Telephony's" Engineering Data

By J. Ernest Hartz

Index, Underground Conduit Construction. August 16, 1941. No. 4-B, page 1.

Conduit and Materials

Asbestos-Cement Conduit

Conduit: *3-inch* inside diameter asbestos-cement conduit.* This type of conduit should be made of asbestos fiber and Portland cement, intimately blended in the process of manufacture to produce a strong, close grained, structure, thoroughly cured, to result in a conduit non-corrosive to lead cable sheath. It should not soften, swell, deform, or collapse on exposure to heat, moisture, frost, steam, or sewer gas. The conduit should be tubular in form, with 3-inch inside diameter*; wall thickness should not be less than 0.32 inch, nor more than 0.50 inch and should not weigh more than 4 pounds per foot. The usual length of sections is 10 feet. Joints between sections are made by means of Harrington tapered joints with tapered couplings so proportioned that the ends of the conduit will not butt. Couplings are made of the same material as the conduit and one coupling is furnished with each section of conduit.

Fittings and Couplings

Adapters: *Asbestos-cement adapters* to connect conduit of the type being used to pipe bends of the type being specified for the job.

Duplex adapters to assemble a tapered end with an untapered end.

"Telephony's" Engineering Data

By J. Ernest Hartz

Index, Underground Conduit Construction. August 16, 1941. No. 4-B, page 2.

Double duplex adapters to assemble two untapered ends.

Adapters to join metal and asbestos-cement.

Reducing adapters to join conduit of different diameters.

Bells: *End bells,* used in combination with a short section of conduit and an expansion coupling to prevent undue shear from coming upon the conduit through the settlement or movement of the duct with relation to the structure into which the bell is cast.

*If cables of diameter larger than 2.5 inches are to be installed, conduit of larger diameter (3½ in. or 4 in.) should be installed.

New Manager of Western Electric Installations

Lewis W. Abbott, for the last six years general manager of the Western Electric Co.'s installation department, retired June 30 after more than two score years of service with the Bell System. Gustaf A. Johnson, formerly the company's personnel director, succeeds Mr. Abbott in directing the nationwide field force now engaged in installing telephone equipment in Bell System offices expanding to meet the mounting communications needs of the preparedness program, as well as in scores of military, naval and other defense establishments.

▼ ▼

Common Battery Service Installed at Paullina, Ia.

The 40th anniversary of the founding of the Paullina (Ia.) Telephone Co. was recently celebrated with the cutting over of a new Automatic Electric manual switchboard, and the completion of a scheme of modernization that eliminated the old types of grounded subscriber lines in favor of the present metallic underground cable plant.

The company was originally formed in 1901 from a number of individual and party lines, and incorporated in 1907. During this time the exchange has had two bell annunciator and two magneto drop annunciator switchboards. The present exchange building was built in 1924 after the original structure was destroyed by fire. This

dependable
Cedar Poles
MICHIGAN POLE & TIE CO.
NEWBERRY—GRAND RAPIDS
MICHIGAN

POLES

B. J. Carney & Co., 100 N. 7th St., Minneapolis, Minn.—Western red cedar poles. Pentrex Butt Treated or Plain.

C. M. Christiansen Co., Phelps, Wis.—Northern White Cedar Poles, plain or butt treated. Quotations on request.

International Creosoting and Construction Co., Galveston, Texas.—Creosoted Southern Yellow Pine Poles. Plants: Beaumont and Texarkana, Texas.

MacGillis & Gibbs Company, Milwaukee, Wis.—Northern White and Western Red Cedar Poles. Plain or butt-treated. Immediate quotations on request.

T. M. Partridge Lumber Co., Minneapolis, Minn.—Northern White—Western Red Cedar Poles. Plain or butt-treated.

Valentine Clark Corporation, 2516 Doswell Ave., St. Paul, Minn.—Finished Cedar Poles. Plain or butt-treated.

PLANT ENGINEERING and CONSTRUCTION
Building and Rebuilding Telephone Plants
Consultation Services
Wiring Jobs, Installations, Switchboard Alterations
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IF INTERESTED in more net telephone directory revenue write or call at our expense.
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Appraisals and Continuous Property Records, Original Cost, Depreciation, and Rate Studies
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"Modernization of Equipment and Methods for Improved Service"
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Kellogg No. 41 Receivers with new shell and cord @.....$1.25

Kellogg or W. E. No. 323 Transmitters complete less back @..... 1.00

Kellogg No. 2800 4-bar 1000 ohm ringer latest type compacts @..... 9.25

Kellogg No. 115 Desk type Grabaphones complete with 3 Cond. cord @..... 4.50

Leich Elec. Local Battery Transmitters complete with back and mouthpiece @... .90

Western Elec. No. 20 C. B. Ind. Coil 35c—No. 46 @..... .50

Kellogg No. 75 1000 ohm Steel Extension Bells @..... 2.50

Kellogg No. 84 desk stands with Trans. & Rec. & 3 Cond. Cord @..... 5.00

Western Elec. No. 534 Steel signal sets with Ind. Coil, Cond. & 1400 ohm ringer @... 4.75

Double pole double throw 15 Amp. Knife switches on Porc. base @..... .25

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STEWART CABLE TESTER & CABLE LOCATOR COMBINED

Locates all cable troubles except opens. Also locates the exact position of buried cable and just how deep it is buried. Sent on trial.

STEWART BROS.
Ottawa, Illinois

POSITIONS WANTED

PLANT SUPERINTENDENT and Engineer, 17 years Independent and Bell experience. Age 39, university graduate. Capable of handling plant and personnel problems in a practical and progressive manner. Employed. Write No. 9040, care of Telephony.

TELEPHONE ENGINEER: College education, experience with Bell System, Regulatory commissions and consulting engineering firm. Age 37. Write No. 9038, care of Telephony.

POSITION WANTED: Man 15 years' Bell experience—cable, construction, switchboard and instrument maintenance. Exchange manager. Now employed. Married; references. Write No. 9039, care of Telephony.

FOR SALE

OWING TO automatic conversion we have for sale three telerings and two late type Holtzer-Cabot ringing machines,—$25.00 each. Write No. 9041, care of Telephony.

GASOLINE MOTOR GENERATOR SET

(Used only slightly as emergency set)

GASOLINE MOTOR MODEL CH

The New Way Lansing, Michigan

H.P.—5 S.A.E. No. C-2572
Speed Range 400 to 900 RPM
Speed Regular 800 RPM

GENERATOR—Holtzer Cabot Type HD

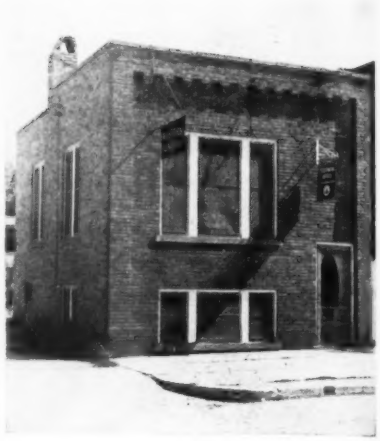
Size 2 H.P. 400 Watts
Volts 65 Speed 700 RPM
Frequency — DC Amp. 6.15
No. 233212

May be inspected at the Bluefield Telephone Company, Bluefield, W. Va.

Write for Prices

BUCKEYE TELEPHONE and SUPPLY COMPANY

COLUMBUS, OHIO



Telephone exchange building at Paullina, Ia.

building has just been reconditioned to accommodate the new switchboard.

The new board was manufactured by Automatic Electric Company and is a two-position, common battery board with universal cord circuits, flashing recall, revertive ringing tone, intermittent automatic ringing, and is equipped for two-party service. A clock, peg-count meters, control keys, and files are built into the face of the switchboard for greater operating convenience.

New self-contained desk and wall Monophones were installed. Despite the rate increase for the new service, 20 new subscribers were gained after the cut-over.

The success of the new installation has been largely due to the careful planning and competent supervision of Kenneth Sutherland, secretary and manager. The other officers of the company are Jacob Van Zwol, president; George Rohwer, vice president; and A. H. Meyer, treasurer.

▼ ▼

Magneto Service Replaced At Slocomb, Ala.

The Standard Telephone & Telegraph Co. of Alabama last month placed dial central office equipment, manufactured by the American Automatic Electric Company, in operation at Slocomb, Ala.

This new exchange, which was cut over with 46 stations, supersedes an old magneto exchange of 40 stations. Along with the other modernized equipment, all the telephone instruments are of the handset type. Housed in a fireproof brick and concrete company-owned building, the new exchange was purchased by the Standard Telephone & Telegraph Co. on July 1, 1940.

Index to Advertisers

	Page
Ad-Lee Co., Inc.	—
Allen Co., Inc., L. B.	—
American Appraisal Co., The	33
American Automatic Electric Sales Co.	18-19, 23, 25, 27, 31, 35
American Fork & Hoe Co., The	22
American Steel & Wire Co.	2
American Telephone & Telegraph Co.	6-7
Anaconda Wire & Cable Co.	—
Armstrong Cork Co., Whitall Tatum Glass Insulators Dept.	24
Automatic Electric Co.	18-19, 23, 25, 27, 31, 35
Babcock Garrison	33
Bartlett Mfg. Co.	—
Blackburn Products Corp., Jasper	—
Berry & Co., L. M.	—
Brach Mfg. Co., L. S.	8
Buckeye Telephone & Supply Co.	34
Burgess Battery Co.	—
Calculagraph Company	—
Carney & Co., B. J.	33
Carpenter Mfg. Co.	—
Chance Company	28
Christiansen Co., C. M.	33
Churchill Cabinet Co.	—
Coffey System & Audit Co.	—
Coffing Hoist Co.	—
Columbia Steel Co.	2
Cook Electric Co.	17
Cook's Sons, Inc., Adam	—
Cope, Inc., T. J.	—
Copperweld Steel Co.	—
Cuneo Press, Inc., The	—
Davey Tree Expert Co.	—
Donnelley & Sons, R. R.	—
Electric Storage Battery Co.	—
Everstick Anchor Co.	30
Fansteel Metallurgical Corp.	—
Fibre Conduit Co.	—
Forged Steel Products Co.	—
Fowle, Frank F.	33
Gardiner Metal Co.	—
General Cable Corp.	—
General Electric Co.	—
Goshen Mfg. Co., The	—
Graybar Electric Co.	—
Gray Manufacturing Co., The	—
Hammond Drierite Co., W. A.	—
Harding Universal Telephone Repeaters	—
Herdrich & Boggs	33
Holtzer-Cabot Electric Co.	26
Hubbard & Co.	25
Ideal Commutator Dresser Co.	—
Indiana Steel & Wire Co.	28
International Creosoting & Construction Co.	33
International Harvester Co.	—
International Telephone Development Co., Inc.	—
Joslyn Mfg. & Supply Co.	—
Kearney Corp., James R.	—
Kellogg Switchboard & Supply Co.	4-5
Kester Solder Corp.	—
Kirkland Co., H. R.	—
Klein & Sons, Mathias	—
Leich Sales Corporation	—
Leeds & Northrup Co.	—
Lenz Electric Mfg. Co.	—
Line Material Co.	29
Loomis Advertising Co.	33
Lorain Products Corporation	30
McCabe-Powers Auto Body Co.	—
MacGillis & Gibbs Co.	33
Matthews Corp., W. N.	—
Michigan Pole & Tie Co.	33
National Carbon Co., Inc.	—
National Construction & Engineering Co.	33
National Fireproofing Corp.	—
National Lead Co.	—
National Telephone Supply Co.	8
Naugle Pole & Tie Corp.	—
Neale Mfg. Co.	—
North Electric Mfg. Co.	Back Cover
Owens-Illinois Glass Co., Hemingray Division	—
Paragon Electric Co.	—
Partridge Lumber Co.	33
Peatrophone Corporation	—
Philco (Battery Division)	—
Phillips Electric Works, Inc.	—
Porcelain Products, Inc.	—
Postal Telegraph Co.	—
Premax Sales Division, Chisholm Ryder Co., Inc.	—
Raytheon Mfg. Co.	—
Ray-O-Vac Company	—
Rebuilt Electric Equipment Co.	34
Reliable Electric Co.	21
Remington Rand, Inc.	—
Rhodes & Sons Co., M. M.	—
Roebling's Sons Co., John A.	—
Schauer Machine Co.	30
Seyler Mfg. Co.	—
Seymour Smith & Sons, Inc.	—
Sherron Metallic Corp.	—
Sloan & Cook	33
Stephens Co., E. W.	—
Stewart Brothers	34
Stromberg-Carlson Telephone Mfg. Co.	3
Sturgis Posture Chair Co.	33
Suttle Equipment Co.	—
Talbot, Emmett D.	—
Taylor-Colquitt Co.	31
Telephone Repair Co.	32
Tele-Tile Co., The	—
Telkor, Inc.	—
Union Carbide & Carbon Corp.	—
United States Steel Corp.	2
Valentine Clark Corporation	33
Wagner-Malleable Products Co.	—
Western Electric Co.	—
Weston Electrical Instrument Corp.	—
Westwood Press, The	—
Whitney Blake Co.	—
Wood Preserving Corp., The, a Koppers subsidiary	—
Wopat, J. W.	33
Wray & Co., J. G.	33

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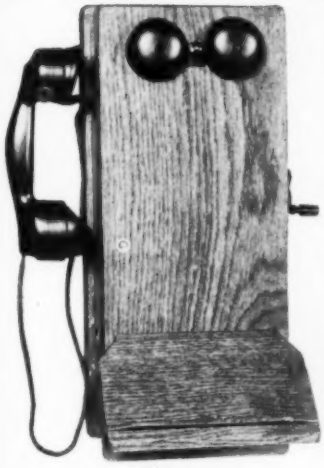

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